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XXII. On Cancer of the Breast. By Thomas William Nunn, F.R.C.S., Eng.; Consulting Surgeon to the Middlesex Hospital. 4to. pp. xiv., 230. London: J. & A. Churchill, 1882	188

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- XXXV. Causes of Deafness among School Children, and its Influences on Education, with Remarks on the Instruction of Pupils with Impaired Hearing, and on Aural Hygiene in the Schools. By Samuel Sexton, M.D., Aural Surgeon to the New York Eye and Ear Infirmary, Member of the American Otological Society, etc.
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- XXXVI. A Case of Ectropion successfully treated by Transplantation of Skin from the Arm and Forearm. By Louis H. Fosswill, M.B. 12mo. pp. 10. London: J. & A. Churchill, 1882 231
- XXXVII. Human Osteology, comprising a Description of the Bones, with Delineations of the Attachment of the Muscles, the General and Microscopic Structure of Bone and its Development. By Luther Holden, assisted by James Shuter. 8vo. pp. xii., 300. Pl. lxi., and wood-cuts lxxxix. Sixth edition. Philadelphia: Presley Blakiston, 1882 232

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TO READERS AND CORRESPONDENTS.

ALL communications intended for insertion in the Original Department of this Journal are only received for consideration with the distinct understanding that they are sent for publication to this Journal alone, and that abstracts of them shall only appear elsewhere subsequently, and with due credit. Gentlemen favouring us with their communications are considered to be bound in honour to a strict observance of this understanding.

Contributors who wish their articles to appear in the next number are requested to forward them before the 1st of August.

Liberal compensation is made for all articles used. Extra copies, in pamphlet form with cover, will be furnished to authors in lieu of compensation, *provided the request for them be made at the time the communication is sent to the Editor.*

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Spirillum Fever, Synonyms, Famine or Relapsing Fever, as seen in Western India. By H. VANDYKE CARTER, M.D. London: J. & A. Churchill, 1852.

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Elements of Pharmacy, Materia Medica, and Therapeutics. By WILLIAM WHITLA, M.D. London: Henry Renshaw, 1852.

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Cholera, Pest und Gelbfieber. Von Prof. Dr. JOH. SCHNITZLER. Wien, 1852.

De los Caracteres Clinicos que Distinguen la Lepra, el Lupus y el Cáncer de la Garganta. Por D. RAMON DE LA SOTA Y LASTRA. Sevilla, 1852.

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Galvano-Cautic Method in Nose, Larynx, and Pharynx. By J. SOLIS COMEN, M.D. Manual of Dental Surgery and Pathology. By ALFRED COLEMAN, L.R.C.P. Edited with Additions by T. C. STELLWAGEN, M.D., D.D.S., Prof. of Physiology in Phila. Dental College. Philadelphia: Henry C. Lea's Son & Co., 1852.

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extensive infiltration of neck, the tonsils were excessively swollen, he died on the fifth day from œdema glottidis.

The fourth fatal case occurred in a girl aged eleven years. The inception of the attack was not attended with indications of the danger which soon crowded the brief record of her disease. It is true the temperature was $104\frac{1}{2}$ and remained high, showing that it was not a light case. Severe sore throat developed with extensive infiltration, abscesses formed in both sides of the neck, which were lanced. Suppurative otitis set in and the little sufferer became deaf. Pericarditis and pneumonia successively occurred and the patient suddenly died from heart clot.

The third group was composed of cases in which intense pyrexia was the most conspicuous feature and the nervous system was profoundly implicated. They were six in number, and their respective ages were as follows; 1 year 11 months, 3 years, 3 years, 6 years, 6 years 6 months, 12 years. Every one of them died.

CASE IX.—The first of these was a girl 6 years old, of healthy parentage, and perfectly healthy prior to this illness. She had a few days before been exposed to contagion in school. In apparently perfect health she was observed to have fever, and all at once had convulsions, which continued to recur with great violence for six hours, at the end of which time she died. The fever rose with the progress of the disease, and had the thermometer been then in use, the temperature would probably have been found excessively high. There was no rash, and the fatal termination took place before the time for its appearance. After death the body was seen covered with extensive ecchymoses. The extreme violence of the disease expended itself in this case upon the nervous system, which was completely and fatally overwhelmed by it. It is the most rapidly fatal case of scarlatina I have ever seen, and the name "*scarlatina fulminans*" might be very appropriately employed to designate it.

CASE X.—Two other cases occurred in one family during a remarkably malignant epidemic. They were both girls, aged respectively 3 and $6\frac{1}{2}$ years. The younger was first taken sick. The temperature was not excessively high at first, but did not in the least abate during the first four days. There was moderate sore throat with coryza and a very acrid discharge. On the fifth day the temperature rose to $105\frac{1}{2}^{\circ}$, and oscillated between this figure and 104° until the twelfth day, when she died. A rather pale and scanty eruption appeared at the end of the second day, but every trace of it had disappeared within forty-eight hours. The pulse was excessively rapid and feeble from the first, and, in spite of free stimulation, could not be improved.

CASE XI.—The older sister was taken sick several days later than her sister, and presented a typical case of scarlatina ataxica. Vomiting, followed by profound prostration, ushered in the attack; she was very pale, pulse too rapid to be counted, temperature 104° . No sign of rash could be discerned, and death took place in thirty-eight hours. In the younger sister high temperature and great disturbance of the nervous system contributed to bring about the fatal result. In the older, who had been up to that time remarkably healthy and strong, the temperature was not excessively high, and the disease did not last long enough for the effects of intense pyrexia to ensue. The disease seemed to act in a shock-like

- A Treatise on Diseases of the Skin. By LOUIS A. DUBRING, M.D., Prof. of Diseases of the Skin in the Hospital of the Univ. of Pa. Third edition, revised and enlarged. Philadelphia: J. B. Lippincott & Co., 1882.
- The Experimental Method in Medical Science. By JOHN C. DALTON, M.D. Second course of the Cartwright Lectures of the Alumni Association College of Physicians and Surgeons. New York: G. P. Putnam's Sons, 1882.
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- Diseases of the Ear in Children. By A. VON TROELTSCH, M.D., Prof. in the Univ. of Würzburg. Translated by J. ORME GREEN, A.M., M.D., Aural Surgeon to Boston City Hospital. New York: Wm. Wood & Co., 1882.
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- The Physician Himself, and What he should Add to the Strictly Scientific. By D. W. CATHELL. Baltimore: Cushings & Bailey, 1882.
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- The Case of Guiteau, a Psychological Study. By G. M. BEARD, M.D. New York. Myxædema. By A. CLIFFORD MERCER, M.D., F.R.M.S. New York, 1881.
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- Microscopic Appearances of the Blood in Scarlatina and Typhoid Fever. By J. H. KIDDER, Surgeon U. S. A. Washington, 1882.
- How to Combat Smallpox. By O. W. WIGHT, M.D. Detroit, 1882.
- Treatment of Irreducible Epiplocele. By L. McLANE TIFFANY, M.D. Baltimore.
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- On Ovariectomy. By THOS. KEITH, M.D. Louisville, Ky., 1881.
- Epidemic Convulsions. By D. W. YANDELL, M.D.
- Commemorative Address on Dr. R. O. Cowling. By D. W. YANDELL, M.D. 1882.
- Anæsthesia and Non-Anæsthesia in the Extraction of Cataract. By HASKET DERBY, M.D. Cambridge, 1882.
- Transient Albuminuria. By F. P. KINNICUT, M.D. New York, 1882.
- Diagnosis of Uterine Anteversions and Anteversions. By CLIFTON E. WING, M.D.
- The Special Therapeutic Value of Hyoscyamine in Psychiatry. Acute Dementia with Recovery in an Old Man. By C. H. HUGHES, M.D. St. Louis.
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- Dentists as Specialists. By G. L. PARMELEE, M.D. Springfield, 1882.
- An Improved Slide for Examination of Gaseous Matter. By E. L. SHURLEY, M.D.
- Refraction of the Eye. By H. CLBERTSON, M.D.
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- The Opium Habit. By E. H. M. SEEL, A.M., M.D. New York, 1882.
- Treatment of Delay in the First Stage of Labour. By JOSEPH E. ALLEN, M.D.
- A New Nervous Connection between Intra-cranial Disease and Choked Disk. By EDWARD C. LORING, M.D.

pulse was irregular and the lethargy continued. After some hesitation as to the proper course to be pursued, it was decided to give stimulants, and beginning at 8 P. M., a teaspoonful of whiskey was administered every hour until 11 o'clock. The ice-cap was continued to the head.

24th. The patient has experienced some relief from the measures employed, but his pulse ranges from 68 to 58, and his temperature from 100° F. to $99\frac{3}{4}^{\circ}$ F.

25th. Temperature $99\frac{3}{4}^{\circ}$ F.; pulse 54. Appetite improving, expresses a desire for fruit. His diet consists of milk, eggs, and beef-tea.

26th. Temperature 99° F.; pulse 52. Continues to take stimulants and milk. The wounds emit a fetid discharge. From the second day after the operation, the cavity of the orbit, the track of the wound, and the nostrils, were washed out with a two per cent. solution of carbolic acid two and three times daily, and great pains were taken to secure perfect cleanliness.

March 1st. Temperature 99° F.; pulse 60. Gave ether and made a free division of the tissues about the inner canthus, and passed a large silver probe along the track of the wound through the orbital plate into the brain and gave exit to some pus having a fetid odor. A curved hard-rubber Eustachian catheter was introduced as a drainage tube and left lying in the nostril and another one passed through the palpebral fissure.

2d. Temperature 99° F.; pulse 54.

3d. Temperature 99° F.; pulse 52. Feeling convinced that suppurative inflammation was taking place in the brain, with the assistance of Dr. John P. Gray, of Utica, Dr. R. F. Weir, Dr. T. T. Sabine, and Dr. E. G. Loring, ether was administered, the orbit entered by an extensive incision through the upper lid just below the brow, the finger introduced into the hole in its roof and the plate of bone broken away with forceps and a rongeur. The dura mater was crossed by a thickened band of tissue, and a feeling of fluctuation was distinctly recognized. The dura mater was freely incised upon the finger as a guide, and a small quantity of very offensive pus escaped. While giving the ether, it was noticed that the patient used the right arm in his struggles much more freely than the left, and this was the first time that any paralysis had been observed. Besides the pus removed by incising the dura mater, some fragments of bone were taken out. A soft-rubber drainage tube was passed through the opening in the roof of the orbit, and the outer end secured to the skin of the cheek by a stitch.

4th. The wound has been syringed out, the tube removed and cleansed and replaced three times a day. The patient complains of pain in the back of the neck, and right shoulder and arm. The paresis of the left forearm and hand remains unchanged. The bowels were moved by stimulating enemata. Poultries are being applied about the orbit. The patient eats ice-cream freely. From the 25th of February to this date the patient's lethargy has disappeared.

5th. Temperature ranges between $99\frac{1}{2}^{\circ}$ F. and $100\frac{1}{4}^{\circ}$ F.; pulse from 68 to 105, reaching 96 at midnight. Paresis of the left forearm and hand continues. Dr. E. D. Janeway examined the patient in consultation, and found the following symptoms, namely: paresis of the extensors of the wrist and fingers of the left hand, the grasp of the left hand twenty-five per cent. weaker than that of the right; supination and pronation weakened, but the extensors appeared to be more powerful than the flexors. The muscular power of the left leg was impaired, and during the examination

- Carotid Compression and Brain Rest. By J. L. CORNING, M.D. New York, 1882.
 Annual Address before the California Medical Society. By G. G. TYRELL, M.D. 1882.
 Determination of a Standard of Colour Sense. By CHAS. A. OLIVER, M.D. Philadelphia, 1882.
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 Electricity in Medicine and Surgery. By J. J. CALDWELL, M.D. Baltimore, 1882.
 Contribution to the Subject of Nerve-Stretching. By WM. J. MORTON, M.D. New York, 1882.
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 Proceedings of Medical Society of the County of Kings. April, May, June, 1882.
 Transactions of the Rhode Island Medical Society. Vol. ii. Part v. 1881.
 Quarterly Transactions of the Lancaster Medical Society. Jan. and April, 1882.
 Report of Births, Marriages, and Deaths in Rhode Island. Providence, 1882.
 Report of the Managers of the Burlington Co. Hospital for 1881.
 Report of the State Asylum for Insane Criminals. Auburn, N. Y., 1882.
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 Fourth Biennial Report of the State Board of Health of Maryland, 1882.
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 American Journal of Neurology and Psychiatry, Feb., May, 1882.
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 American Journal of Dental Science, Dec. 1881, to May, 1882.
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 Fort Wayne Journal of the Medical Sciences, Jan. to April, 1882.
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THE
AMERICAN JOURNAL
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ARTICLE I.

ON THE NATURE, MODE OF PROPAGATION, PATHOLOGY, AND TREATMENT OF SCARLATINA. By JOHN A. OCTERLONY, A.M., M.D., Professor of the Principles and Practice of Medicine, in the Kentucky School of Medicine, Louisville, Ky.

Opinionum commenta delet dies, naturæ judicia confirmat.—CICERO.

THE materials for this paper were furnished by fifty-eight cases of scarlatina observed and treated by the writer during a series of years, and of which records, more or less complete, were made at the time of observation. These records were kept without any other object than to preserve in available form an experience which otherwise would ere this have become a dim and imperfect recollection. The facts recorded were not seen through the medium of any theory, and I hope I have utilized my materials in the same impartial spirit in which they were gathered together.

The title was formulated by the Prize Essay Committee of the Kentucky State Medical Society, which also prescribed that the paper should embody original researches or clinical observations. This fact will explain the almost exclusively clinical method in which the subject is treated. Owing to the incessant demands of an active practice, and other professional duties, the paper was not completed within the time prescribed by the Committee. In the hope that it may contain something of value, the author now submits it to the profession in these pages.

The Nature of Scarlatina.—It seems that although one had never read anything relating to scarlatina, but had intelligently observed the disease for a few years, as it appears season after season in our cities, towns, and villages, and even in sparsely settled neighbourhoods in the country, he

would soon have convincing evidence that it spreads by personal communication from one to another. As observation continued and became more extended it would also appear that all persons are not equally susceptible to the morbid influence. A further examination could not fail to reveal that among those exempt from its inroad a large proportion had already had the disease, and that among those suffering from it only a very small number had ever had a prior attack.

These two peculiarities, namely, propagation from one person to another, and the almost perfect immunity conferred by a previous attack, would quickly lead the observer to class scarlatina with the group of infectious diseases to which it really belongs. Doubtless there may even now be some who deny the correctness of this view, but, even if recognized authorities were not unanimous on this point, the writer would still be compelled, on clinical grounds, to maintain that scarlatina is an acute infectious disease.

When large numbers of individuals, living under the most varied conditions, are attacked within a short time by the same disease, which often successively affects one member after another in the same family, we naturally look for a common cause. On analyzing my cases no reason can be found to ascribe the disease to either atmospheric or telluric conditions, for they occurred at all seasons and under the most different thermometric and barometric conditions.

In but few instances could the disease have been due to bad hygienic surroundings, for the majority of the cases occurred in families whose dwellings and mode of life were as nearly perfect as possible.

In only 21 out of 58 cases could the disease be traced to communication with scarlet fever patients, and only 24 cases occurred during the prevalence of scarlet fever epidemics. So that in 34 cases out of 58 which occurred when there was no wide-spread epidemic, the source of the disease could not be detected or was overlooked, or else the disease originated *de novo*, independent of infection from another person affected with it. The following case appears to belong to this doubtful class:—

CASE I.—W. G., *æt.* 5 years, was seized with vomiting, became drowsy and had fever. On the next day the characteristic rash appeared, and soon became general; there was moderate sore-throat, slight and transient albuminuria, but no casts. The rash had entirely disappeared by the end of the seventh day, and was followed by moderate desquamation, which was completed at the end of three weeks. This child had been confined to the premises of his parents for weeks prior to his illness. No case of scarlatina had occurred in the neighbourhood, and, so far as could be ascertained by careful inquiry, no one visiting the house had been near a scarlatinous patient for months. The disease was not prevailing to any marked extent in any part of the community at the time, and had not prevailed for a good while previously.

It is even more difficult to account for the sudden appearance of scarlatina in an isolated locality, where the disease has not been for a long time,

where no communication with an infected locality has taken place, and where no case of the disease has been known to exist for many miles around. There is of course a possibility that a light case, or cases, may have really occurred which were overlooked, and which served as a focus of infection. The plausibility of this supposition is shown by the following case:—

CASE II.—In the summer of 1876 I saw in consultation with a professional friend, a little boy about 6 years of age, who had general dropsy and uræmia. Careful inquiry elicited the fact that about three weeks before he had a slight scarlet rash, which did not remain long and did not make him sick at the time. Yet nephritis and uræmia ensued, and the little patient died in convulsions very shortly after I saw him. In this case the nature of the rash had been overlooked by the mother, who had no idea that her child had scarlatina, and only consulted a physician when the dropsy and great pallor, having reached a formidable degree, suggested to her mind that the child might be in a dangerous condition.

The question of a *de novo* origin of scarlatina has become considerably narrowed down since it became known that the disease occurs also in several species of domestic animals, namely, the cat, dog, horse, and hog. It can hardly be doubted that many cases which were supposed to have originated independent of infection may have been due to transmission of the disease from some of these lower animals.

The infectious nature of scarlatina was strongly indicated in a good many instances among my fifty-eight cases. In the family of Mr. A. were five children, whose ages ranged from 23 months to 10 years. The four younger ones successively sickened, but the oldest, a remarkably strong and healthy boy, who had passed through an attack of scarlatina four years before, escaped. In Mr. M.'s family were also five children, of these the three younger were successively taken sick, so as to make it very apparent that those later attacked had contracted the disease from the first. The two elder children had several years before had a severe attack of scarlet-fever, nevertheless one of them now had the disease again with nephritis and uræmic convulsions. Mr. B. had a family of six children; one of these developed scarlatina, and in the course of two weeks four of the children were taken down with it. The youngest, a suckling infant of six months, alone escaped. Many other similar cases have occurred in my experience, but I restrict myself to those which belong to the number included in the clinical material of this paper.

A study of larger numbers of cases would undoubtedly make the infectious nature of scarlatina appear more conspicuous, but even the cases recorded by me sufficed to impress it very emphatically on my own mind.

The lesson taught by clinical observation has been confirmed by experimental inoculation, and the results amount to absolute demonstration. Miquel, Stole, Rostan, and Williams relate cases in which healthy persons were artificially infected by inoculating them with blood, or epidermic

scabes taken from scarlet fever patients. The contents of vesicles on the skin of patients with scarlatina have also been used for the same purpose. These inoculations appear not only to have been followed by the characteristic febrile exanthem, in some instances as violent as the disease naturally contracted, but they also conferred, at least, a certain degree of protection, for repeated inoculation failed to produce the rash and fever, which had followed the first.

Turning now from further consideration of the infectious nature of scarlatina, to inquire into the nature of the infecting agent, the writer finds himself face to face with a problem that has excited the curiosity of medical men for ages, and baffled their closest investigations.

While some have frankly confessed entire ignorance as to everything concerning the contagium of scarlatina, declaring that we know nothing about it save its effects, others have thought that the bacteria found in the blood of scarlatina patients constitute the infectious substance and the true and only cause of the disease. In some of the few autopsies made by the writer he found bacteria in great numbers both in the blood and serous effusions in the pleuræ, pericardium, and peritoneum. But as in these cases the examination was not made very soon after death, the presence of the bacteria was attributed to decomposition, and when found in the blood of one patient during life they were supposed to be the result rather than the cause of the disease. All this time it was believed that the scarlatinous poison existed in the blood, and it was known also that inoculations with blood from scarlet fever patients had infected healthy persons with the disease. Neither was it unknown to the writer that the injection of blood from scarlet fever patients in which bacteria were present, was followed by the appearance of innumerable bacteria in the blood of the animal receiving the injection, while at the same time grave constitutional disturbances manifested themselves, and the greater number of animals thus treated died—but not with the characteristic symptoms of scarlatina. Hence one could not regard the presence of bacteria in the blood of scarlatinous patients as having solved the question. What is the nature of the poison of scarlatina? Microscopical investigations extending over a series of years have led to the discovery of a minute organism which appears to be peculiar to scarlet fever. The discovery was made by the distinguished Dr. Eklund,¹ of Stockholm, but, so far as the writer has been able to ascertain, it has not, up to this time, been laid before the medical profession of the United States. Under these circumstances, and having repeated, and to some extent confirmed, the investigations of Dr. E., I feel at liberty to give the following *résumé* of the conclusions to which these investigations have led.

In the urine of scarlatinous patients there is constantly present a truly

¹ *Contribution a la Geographie Medicale.*

prodigious mass of peculiar cellular bodies, which have received the name of *plax seindens*. They consist of sporoidal cells, flat, oval, or rounded, and either colourless or yellowish-white; they have a distinct cell wall, and a nucleus of a clear brownish colour. Sometimes the nucleus contains a very minute nucleolus. As seen floating about in the fluid examined, they often exhibit rotatory or screwing or see-saw movements. The investigations of Dr. Eklund thus far I have repeatedly verified. He further observed that these little bodies multiply first by division of the nucleolus, then the nucleus divides, lastly the cell itself undergoes division. He has never been able with certainty to determine that mycelium filaments develop from these cells. As a rule they were found free, and only exceptionally were they accompanied with extremely minute mycelial filaments. The cells of *plax seindens* never arrange themselves in rows like strings of beads, as do ferments, nor do they cling together in groups, as do the *zoogloea* properly so called.

The cells of "*plax seindens*" are certainly not identical with the small corpuseles described by Schultze, and mentioned in the first volume of Stricker's "*Histology*," page 379. The latter were found in the blood of healthy persons; the former, so far as yet ascertained, only in persons with *searlatina*. It also seems that they differ materially in character and conformation.

The *hæmatoblasts* of Hayem, mentioned in Satterthwaite's "*Histology*," page 47, also differ materially from the cells of *plax seindens*.

The *hæmatoblasts* are said to make their appearance in the blood during convalescence from acute fever, and after considerable losses of blood, while the cells of *plax* are found in greatest abundance during the height of *scarlet fever*, not only in the blood, but also in the urine, and then rapidly disappear.

Since my attention was called to this interesting discovery, I have often examined the urine of patients having *searlatina*, and have always found the *plax seindens* in great numbers. Examinations of blood from *scarlatinous* patients also revealed the presence of the same cells. So far as my own limited observations go, the *plax seindens* is not found in the blood or urine in any other disease than *searlatina*, and is said to be constantly present in these fluids in this disease. Hence it would appear as if the infectious agent in *searlatina* has at last been found. All honour to our distinguished transatlantic investigator. The writer of this essay congratulates himself upon having had this opportunity of calling the attention of his professional brethren of the United States to this interesting and important research of Dr. Eklund.

Mode of Propagation.—The mode of propagation of a disease depends upon its nature, the latter in its turn is determined by the nature of the cause to which it is due. The circumstances or conditions favourable to the active operation of the cause must also be taken into account in order

to understand the mode of propagation. Hence a study of the susceptibility to scarlatina, and the nature and origin of the *plax scindens* (believed to be its only cause), are both essential to the investigation of its mode of spreading.

Differences in the degree of susceptibility to this as well as to other infectious diseases are of daily observation. Age appears to be a powerful element in creating a predisposition to scarlatina, as will be seen by the following table giving the age of my cases:—

						Males.	Females.	Total.
Under 1 year						1	1	2
Between 1 and 2 years						1	2	3
" 2 " 3 "						2	0	2
" 3 " 4 "						3	2	5
" 4 " 5 "						4	5	9
" 5 " 6 "						3	2	5
" 6 " 7 "						7	2	9
" 7 " 8 "						1	3	4
" 8 " 9 "						3	0	3
" 9 " 10 "						0	2	2
" 10 " 11 "						1	2	3
" 11 " 12 "						0	2	2
" 12 " 13 "						1	2	3
" 13 " 14 "						0	0	0
" 14 " 15 "						1	0	1
" 15 " 16 "						0	2	2
" 22 " 23 "						0	1	1
" 26 " 27 "						0	1	1
" 32 " 33 "						0	1	1
						28	30	58

From this table it would appear that young infants are not very susceptible to the disease. Only two cases out of fifty-eight were under one year. The first was a girl of three weeks; the rash was well marked and typical; the throat but slightly affected; the urine could not conveniently be examined; there was decided desquamation, but the scales were rather branny than flaky, and not excessive in quantity. Convalescence was established within a week.

The second was a boy, almost a year old, large and fat. The rash was characteristic, but moderate. The glands became early affected, and soon there was general infiltration, with great swelling and induration of the whole neck, which presented an appearance resembling the peculiar form of carcinoma of the breast, which the French call "*carcinoma a cuirasse*." Respiration became much impeded, and the little patient died on the sixth day of the disease from a combination of coma and asthenia.

After the 15th year females appear to be far more susceptible than males, as there is no male among my cases after that age. The number of females over fifteen years was five. Two of these five cases, however, occurred in the same person. Both attacks were incurred by nursing children sick with scarlet fever. The patient had gone through the disease in

childhood, but is peculiarly-susceptible to its contagion. When engaged the first time in nursing, she was in a few days attacked with sore-throat and fever, and a faint rash. Six years later, when she had nursed several children in scarlet fever of a very malignant type, she again had sore-throat and enlargement of the glands in the neck, with fever but no rash. The majority of my cases occurred during the first ten years of life, in the proportion of 44 out of 58.

Sex appeared to exercise some influence, more male children being attacked during the first ten years in the proportion of 25 males out of 44 cases. After the tenth year the susceptibility of females seems to be much greater than that of males, for of the 14 cases which occurred between the ages of 10 and 33 there were only 3 males, and these below 15 years, the other 11 cases were females. But even in females the susceptibility diminished greatly with advancing age, for among the 11 cases which occurred between the 10th and 33d year, 8 were in patients under 16.

It was generally found that the disease was lighter in proportion to the age of the patient. In this respect scarlatina presents a striking contrast to measles, which is, as a rule, lighter in the very young, and assumes a severe type in adults. ~~A~~ patient, whose case is marked in the table as having occurred in her 23d year, was a robust servant girl of florid complexion, her general health had always been good. She had no remembrance of having scarlet fever as a child, and did not believe she had had the disease. The attack was not ushered in with vomiting, but there was a slight rigor, and the temperature quickly rose to $105\frac{1}{2}^{\circ}$ Fahr. The rash appeared late on the first day; it soon became uniform and of intense scarlet hue. There was but little throat trouble. The desquamation was excessive, and protracted to the sixth week. During the height of the disease there was slight albuminuria, but casts were not found at any time.

I have already mentioned the fact that very young infants are not so susceptible as children between two and ten years. In the family of Mr. G. two of the children had scarlatina, but the youngest daughter, an infant of about eighteen months, though brought in daily contact with the patients, escaped it. Mr. B.'s five children had scarlatina, but an infant about eleven months, who slept in the same room with two of the patients, and was in daily and close contact with them, entirely escaped. Many other cases of the kind might be adduced. A large number of individuals are not at all susceptible to scarlatinous infection, and may expose themselves to it without danger. In some this immunity is permanent, and lasts through life. In others it wears out, and the individuals, after having over and over again been exposed without effect, become all at once susceptible to infection, and contract the disease. In a majority of instances one attack of scarlatina destroys the susceptibility of the patient, and though he may afterwards often be exposed to the disease he never contracts it again. But almost every physician has observed cases of a second attack

of scarlatina in the same person, and a third attack even has been observed. These subsequent attacks are not always modified by the first, but may even exceed it in severity and the gravity of the complications. An illustration of this is seen in the following case:—

CASE III.—W. M., at the age of six years, had a rather severe attack of scarlatina, with marked throat trouble, coryza, and suppuration of the ear, and an extensive bronchial catarrh. After this he on several occasions came in contact with the disease, but did not again have it until he had passed through his twelfth year. The younger children in the family then suffered from a severe type of scarlatina, and he had the disease a second time, and came very near dying from scarlatinal nephritis. This case will be mentioned again later on. In another case the susceptibility returned much more quickly; the patient was a girl of ten years, and was the first in the family to contract it. Eight months later, after it had gone through the family, she had a second attack, so well marked and characteristic as to leave no room for doubt as to the correctness of the diagnosis. No other explanation of this second attack suggested itself than that the protective influence of the first attack having been exhausted, she became again infected by miasm, remaining in the house from the time when the other members of the family had the disease.

The miasm of scarlatina certainly retains its vitality and power of mischief for a long time, as will be shown by the following case, and I am aware that many other instances have been recorded in which infection occurred after a much longer interval.

CASE IV.—Mrs. — with her son, aged 3 years, went to a watering place for a few weeks. She was assigned to a room which three months before had been occupied by a patient having scarlatina. Her child in a few days developed the disease, and died of it in a week.

The most frequent mode of infection, I believe, is by breathing the air of a chamber occupied by a scarlatinous patient, but it may also take place without direct communication with a person having the disease. There can be no doubt that persons may carry scarlatina to others without becoming affected with it themselves. Many cases of the disease in physicians' families originate in this way. A medical friend of mine thus became the medium of infection to his child. A good many years ago I was attending a case of scarlatina and a week later, my own child, who, as far as could be ascertained, had not been exposed to infection in any other way, became affected with the same disease. I have never been able to convince myself that in my own cases the miasm had gained entrance to the system in any other way than by the pulmonary mucous membrane.

The atmosphere may, however, I believe, be contaminated not only by the air exhaled by scarlet-fever patients, but also by the secretions, especially the urine, which, as already shown, contains large quantities of the miasm, the *plax scindens*. It is possible that the intestinal evacuations may also contain the miasm, but of this I have never satisfied myself; if

examination should demonstrate that they do, it is likely this excretion may also give rise to infectious emanations. The blood being charged with great masses of the miasm may of course in case of hemorrhage occurring in scarlatina become a medium of infection. On drying and becoming reduced to powder the blood easily gives up the miasm, which, being very minute, is carried by the atmosphere.

There still remains a large number of cases in which infection of the patient by another person having scarlatina, either directly or indirectly, cannot be assumed. These were, until recently, supposed to be instances of a "de novo" origin of scarlatina. It is to the elucidation of this class I would apply the study of the origin and nature of *plax seindens*, although it will be found that this study as shown by Eklund is capable of furnishing important indications for the prevention of scarlatina as well as of throwing light upon its origin and mode of propagation. But here again my own experience fails me, and I must quote the observations of my distinguished friend Dr. Frederik Eklund, of Stockholm. His researches have been so profound and exhaustive and are so pregnant with important practical results that I could hardly avoid alluding to them. It has been ascertained by him that the *plax seindens* is among the most common vegetable parasites found in the soil, in water, on mouldy walls, and on mouldy wall paper. He found innumerable masses of this parasite on making microscopical examinations of the soil and water of muddy places, and of the excavations dug for the purpose of laying water pipes.

Scarlatina immediately broke out among the children of a family living close to the place where the earth had been dug up in order to lay water pipes, and who could not help breathing the exhalations from the water evaporating from these excavations during the warm summer days. A child falls into the mud while playing, the soiled clothes are hung to dry and are afterwards beaten and brushed within doors; soon afterward he has an attack of scarlatina. The explanation is not doubtful. The parasite contained in the miry soil has entered the house, and has been set afloat in the atmosphere with the fine dust brushed out of the clothing. The air breathed by the child is laden with great numbers of it, and once within the organism its irritant effects in due time declare themselves. I regret that other duties have prevented me from verifying by my own observations these researches of Dr. Eklund, relating to the origin of *plax seindens*.

They certainly furnish a natural and plausible explanation of the origin of scarlatina, where, without it, one would be obliged to admit that this disease, at times, occurs independent of infection. This would involve the rather awkward assumption that the cause of a specific disease is sometimes specific and sometimes not. As previously stated, I have never seen a case where I thought the infection of scarlatina had entered the organism in any other way than by the lungs, but as suggested by Dr.

Eklund, the drinking of milk which has been diluted with water containing the *plax seindens* may well be admitted as a cause of scarlatina, especially since the published observations of Bell and Taylor, in England, have shown that scarlet fever may originate through the medium of infected milk.

The *plax seindens* multiplies by fission and belongs to the order of schizomyces or cleft-fungi. Great warmth favors this process; it is therefore but natural that the heat in the interior of the body should furnish most favorable conditions for the rapid increase of the parasite when it has once gained an entrance into it, and the blood and secretions soon become richly charged with it and then with fine mycelial filaments.

It is held by many that the epidermic scales shed so abundantly by scarlet-fever patients during the period of desquamation contain the infectious principle of the disease, and some believe that it is most infectious during this period. My clinical studies do not confirm this view. When scarlet-fever has broken out in a family I have generally found that one or more of the other children were attacked before desquamation had begun in the person first taken sick. It has appeared to me that the infection was strongest during the height of the fever and during the period the parasite is found in largest quantity in the urine. The desquamation is a result, a sequel of the disease, and is commensurate with the antecedent inflammation of the skin. In other kindred diseases infection is most active while the morbid process is most intense, not after it has come to a close. It is difficult to say how long infection may linger about the person after he has passed through scarlet fever, and how long his immediate surroundings may continue charged with the parasite. I cannot believe that the epidermic scales contain it, for I have repeatedly subjected great numbers of them to microscopical examination without ever finding it. The *plax seindens* is so minute and is present in such large quantities that it may attach itself to clothing, furniture, wall paper, ceiling, carpets, books, etc., and one can well understand how easily it may adhere to rooms and persons, and how readily it may be wafted about by air currents and in that way spread infection, without invoking the shedding scales of epidermis to explain its propagation.

Pathology.—This embraces first, the morbid process, and second, the anatomical changes and the morbid phenomena or symptoms which result from them.

The morbid process in scarlatina is believed to be due to the irritating presence of the *plax seindens*, but the primary steps in this process are necessarily unknown. It is not possible to say with certainty upon what tissues or upon what system, whether vascular or nervous, the irritation is first exerted. From the fact that scarlatina is ushered in, generally, with symptoms of great disturbance of the nervous system, it may be assumed that the latter is primarily acted upon. Eklund (*loc. cit.*) believes that

the rotatory and terebrating motion for which the little parasites are noted could hardly avoid having a disturbing influence upon the vasomotor ganglia and the terminal filaments of the great sympathetic. But actuated by a prudent reserve, he forbears expressing an opinion whether this disturbance be of "irritating or paralyzing nature." That the blood is in some way altered by the presence of the parasite is probable, but whether directly or indirectly, or exactly in what manner, is unknown. The scarlet color of the skin is due to intense congestion and inflammation of this structure which may be presumed to be due to the irritant pressure of the parasite.

Fever as intense as the fever of scarlatina may be induced by an equally extensive and intense, but non-specific inflammation of the skin. But as the fever in scarlatina often precedes the cutaneous affection by twenty-four or even forty-eight hours, and as the latter may even be entirely absent, it is most likely they both depend upon a common cause.

Early development of the fever, its intensity, and with certain qualifications, its duration, are a measure of the energetic action of the parasite and of the profound implication of the nervous system.

The morbid process appears to be self-limited so that after running its course it comes to a close spontaneously. On its completion the organism, though in outward appearance restored to its pristine condition, will have undergone a more or less enduring change; for it is, in the majority of instances, no longer capable of being acted upon in the ordinary way by the scarlatinal miasm. What this modification exactly consists in, by what intimate alterations of tissues it is attended, is entirely unknown.

It requires a certain length of time for its accomplishment, and this length of time constitutes the duration of the disease, unless cut short by death or protracted by complications.

In estimating the duration of scarlatina I have deducted the fatal cases and complicated cases which recovered. This was necessary, in order to arrive at a correct view of the normal duration of scarlatina, the importance of which can hardly be exaggerated; for without this knowledge it is impossible to determine whether any particular plan of treatment influences the disease favourably or unfavourably, whether it shortens or lengthens its course.

Fifteen cases terminated fatally, and three cases which recovered had serious complications, making a total of seventeen cases which are to be deducted from the whole number of recorded cases. The duration of the remaining forty cases will furnish the average duration of scarlatina in its various forms, so far as any generalization may safely be based upon so limited a number.

The rule adopted by me in estimating the duration of the disease was to date its beginning from the inception of fever, and its close from the disappearance of fever with marked improvement in leading symptoms.

Perhaps it may be objected that the exact beginning of the fever cannot always be ascertained, and that therefore it would be better to count from the occurrence of the chill or the setting in of vomiting; but both these may be wanting, and the chill, especially, was frequently unobserved among the youngest of my patients. I have therefore preferred the rule mentioned above. According to this mode of calculating it was found that the average duration of the disease in forty cases was six and one-sixth days. The minimum duration in a very slightly marked case was three days; the maximum duration was fourteen days. The latter was an unusual case: the most careful and persistent examination failed to discover any complication, no local mischief ever developed, and the long duration of the fever, which was entirely uninfluenced by quinia, seemed to be entirely due to a more protracted blood poisoning. The child was in perfect health up to the time she was taken sick of scarlatina, and was unusually well developed and vigorous. A similar case, but in which the fever did not last more than ten days, occurred in a boy.

Pathological Anatomy.—Under this head I wish to present some facts collected by clinical observation, and others noted at post-mortem examinations. The former will be limited by the number of my recorded cases, the latter are necessarily few; for all my cases occurred in private practice, and an autopsy could but rarely be asked for, and was still more rarely permitted.

In studying this clinical material the cases were arranged in several classes, according to the grouping of symptoms. The old classification into three forms, *S. simplex*, *S. anginosa*, and *S. maligna*, did not appear altogether practical or satisfactory. Many cases occur which cannot be properly said to belong to the first variety, although the violence of the disease certainly appears to expend itself upon the skin, and those in which the kidneys are chiefly affected do not, properly speaking, belong to either of these three varieties. The cases were, therefore, classified as follows:—

A. The cases in which the skin affection was the most prominent feature. They differed widely, and were classed:—

1st. Those in which there was moderate eruption, and not excessively high fever.

2d. Those in which there was intense eruption and high fever.

3d. Those in which the eruption, at first simply a strongly marked scarlatina rash, became vesicular or later even pustular.

4th. Those in which the eruption was hemorrhagic.

B. The cases in which the throat affection was the most prominent feature. They were found to differ according to the degree of intensity of the throat trouble, the degree of fever, and the presence or absence of eruption.

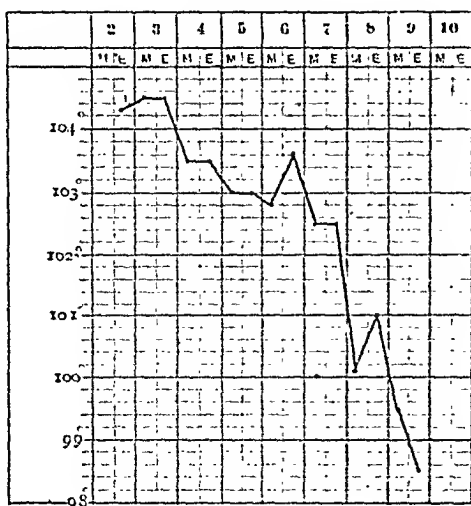
C. The cases in which pyrexia was the chief symptom, and in which the nervous system was profoundly implicated.

D. The cases in which the kidney affection was the most conspicuous feature.

On analyzing the cases, the class in which the skin affection constituted the most prominent feature is found to compose the majority, being forty-one out of fifty-eight. Of these forty-one cases twenty-eight were characterized by moderate fever and eruption, ten had intense eruption and high fever, one had an intense fever which became vesiculo-pustular, and two had intense fever with an eruption which I have designated as hemorrhagic, although there were no hemorrhages from internal organs, which have induced some writers to describe a variety of scarlatina under this name.

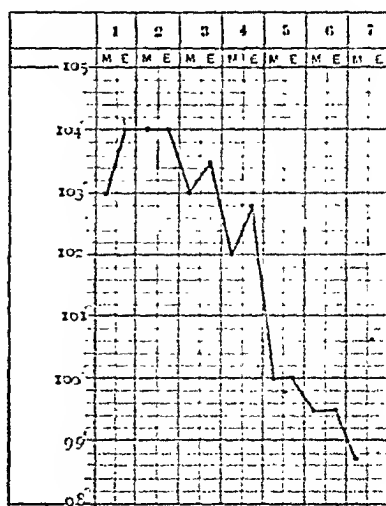
All the twenty-eight cases belonging to the first subdivision recovered, except one in which septicæmia occurred as a sequel. This case will be mentioned in detail later on. In eleven of them there was slight albuminuria during the height of the fever. The urine, however, contained neither blood-cells nor casts, and was not "smoky." The amount of albumen was very small, and was present only from twenty-four to sixty hours. As there was no other indication that the kidneys were implicated, the albuminuria was regarded as dependent upon some transient modification of the renal secretion but wholly unconnected with any inflammatory change in these organs. In only one instance among those who recovered did the fever continue after the rash had entirely passed away. This case has already been mentioned as lasting fourteen days.

CHART I. (A. T., æt. 7., moderate eruption and fever.)



1. Eruption.

CHART II. (H. B., æt. 8., moderate eruption and fever.)

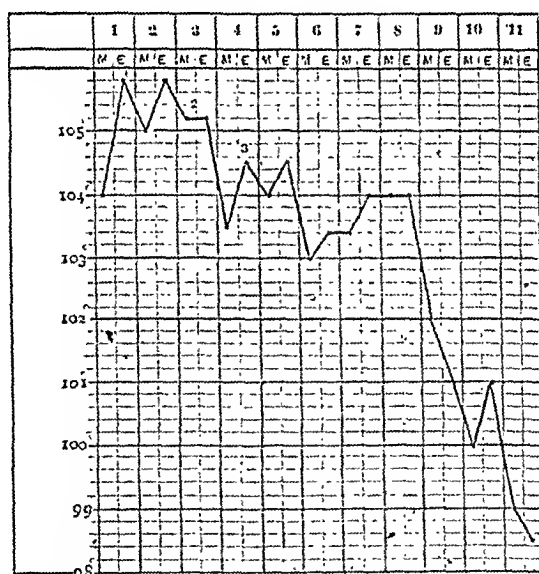


1. Eruption.

In fifteen cases the disease was ushered in by vomiting, and the temperature rapidly reached the fastigium. Drowsiness was noted in all the cases during the pyrogenetic stage. Spontaneous diarrhoea occurred in nine cases toward the close of the eruptive stage. In seven there was observed a more or less marked rigor, initiating the attack, but only in the older children. Temperature charts (I. and II.) are appended, illustrating the course of the fever in two cases belonging to this class.

The second subdivision, characterized by intense fever and eruption, includes ten cases, whose ages were respectively two years, four, six, six, six, eight, eight, twelve, twelve, and twenty-three. All these patients also recovered, but several had complications of more or less serious nature. W. M., æt. six years, had severe general bronchitis, inflammation of throat and ulceration of membrana tympani with protracted otorrhœa. F. M., æt. two years, had slight convulsion before the rash appeared. S. J., æt. four, had a moderately severe pneumonia and albuminuria without casts, and the pyrexia lasted ten days from day of first visit. The patient aged twenty-three years has already been alluded to. Charts giving range of temperature and duration of fever in some of these cases are appended.

CHART III. (S. J., æt. 4.)

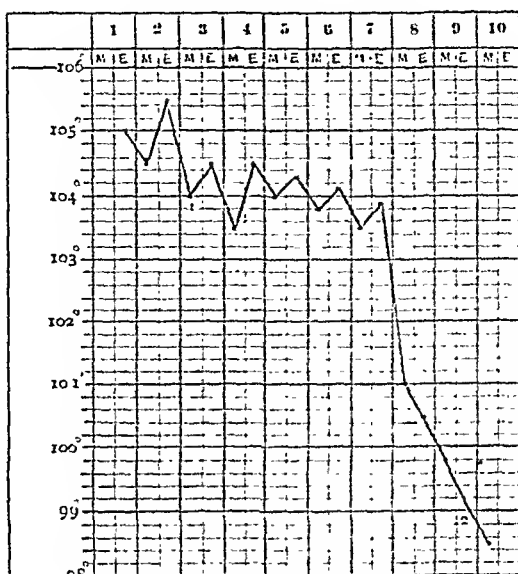


1. Eruption. 2. Albuminuria. 3. Pneumonia at base of lung.

In this case (Chart III.) the fever was intense, and the occurrence of lobar pneumonia did not seem to interfere with the progress of the disease, its accession was not marked by a higher rise of temperature than had been observed the previous night.

The eruption in the next case (Chart IV.) may have developed during the night of the second day, but was not observed until the morning of the

CHART IV. (Ellen C., æt. 15.)

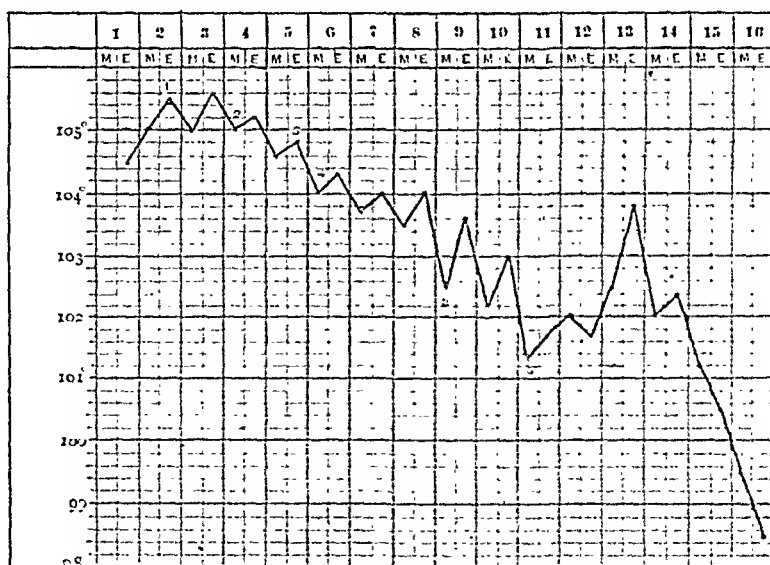


1. Eruption. 2. Desquamation.

third day. The eruption began fading on the seventh day, had disappeared by the ninth day, and desquamation set in by the tenth day, and was very abundant.

CASE V.—In this case (Chart V.) the eruption appeared on the second day in the evening, and soon became general; it was of intense scarlet color.

CHART V. (Case V. W. M., æt. 6 years. Intense pyrexia, quite protracted, complicated with angina, suppurative otitis, and general bronchitis.)



1. Eruption. 2. Throat affection. 3. Albuminuria.
4. Bronchitis. 5. Otorrhœa. 6. Desquamation.

The throat affection had become troublesome by the fourth day, and consisted of ulceration with great swelling of the tonsils, the glands in the neck were greatly enlarged, and there was coryza with an acrid irritating discharge. Bronchitis which became general and severe declared itself on the sixth day. On the ninth day pus began to flow from the external meatus of the left ear. Desquamation set in on the eleventh day, the rash having disappeared two days before. The pyrexia had not come to an end until the sixteenth day, and the convalescence was tedious and protracted; desquamation was excessive and continued for weeks. Hearing of left ear permanently injured by ulceration of membrana tympani. Albuminuria was present though only in small degree, beginning on the fifth day, and continuing for a few days.

CASE VI.—The eruption became vesiculo-pustular in one case only. This was a female child of four years, both father and mother unhealthy. The disease was ushered in with vomiting; drowsiness, transitory, and not very marked, in the beginning. Rash appeared on the second day of fever; it was attended by an unusual degree of itching, and became intense and general. At the close of the third day the patient was so covered that one could not find the smallest space of normal colour upon the integument of the trunk. By this time a large number of vesicles made their appearance, first upon the chest and abdomen, and then upon the sides and back. The extremities were not invaded to the same extent, yet numerous vesicles were scattered over their surface. On the fourth day these vesicles had assumed a yellowish tint and had evidently puriform contents, and the surrounding skin still retained the same intense scarlet hue. It was apparent that the functions of the skin were in abeyance and the little patient showed signs of approaching coma. There was some lividity of the lips, the finger nails became bluish, and it was impossible to keep her awake for more than a few moments at a time. The fever continued, the throat was not much affected, and the glands in the neck were not perceptibly enlarged. Albuminuria was present the third, fourth, and fifth days. The tincture of the chloride of iron was given internally, and under the application of cloths wrung out of tepid water the action of the skin was restored, and the fever went down so that the patient was convalescent on the seventh day, but very feeble. Desquamation was prolonged and abundant. Although the issue was favourable this patient was for forty-eight hours in a very alarming condition, and it has always seemed to me made a very narrow escape with her life.

The last subdivision of the class of cases in which the skin affection was the most conspicuous feature includes those in which the latter assumed what I have called the hemorrhagic type. Two instances of this kind occurred in my fifty-eight cases. Both terminated in death, though not in the same manner.

CASE VII.—Lee A., aged five years, was a fine large boy, perfectly healthy and strong up to the day he was taken sick of scarlatina. There were indications from the very outset that the disease would be severe. The vomiting, which was the initial symptom, was quickly succeeded by great drowsiness, high temperature, and diarrhoea. The rash appeared at the usual time, but was characterized by excessive redness, and in twenty-four hours became universal. Delirium set in already on the third day. The pulse was very rapid, small, and irregular. There was, however, comparatively little throat trouble. But the rash, in spite of the patient's

alarming prostration, became more intense, the hyperæmia of the skin was excessive, it assumed a purplish hue, the surface became rough and coriaceous, from infiltration; the epidermis became raised in thick scales not unlike ichthyosis, effusions of blood rendered the skin darker and thicker, and in some places were petechiæ. High pyrexia, profound ataxia, intense eruption, delirium, and diarrhœa were the most striking symptoms. The tongue presented the characteristic "strawberry" appearance, by some called "cat's-tongue," but it soon became dry, covered with sordes, and fissured. Death ensued from asthenia on the sixth day. In this case the patient was overwhelmed by the disease from the very first, and although the skin was the seat of the most conspicuous alterations, still the profound ataxia, uncontrollable delirium, and excessive diarrhœa showed how pervasive and violent was the action of the morbid agent.

CASE VIII.—The other case was a boy, æt. twelve. The disease began without any indication of unusual severity. The rash was first noticed on the morning of the second day, with a temperature of 104° which, however, rose to $104\frac{1}{2}^{\circ}$, and, during the night, attained 105° . The rash simultaneously became more extensive and of a deeper red, until the hyperæmia reached the highest degree. The skin now became rough from partial detachment of epidermis by infiltration and effusion of blood, which latter made the skin still darker in places. In spite of full doses of salicylic acid and salicylate of soda, the temperature rose, and on the fifth day stood at 110° , when a sudden convulsion occurred, in which he died.

In this case the blood poison appeared to develop during the progress of the disease a steadily increasing virulence which expended itself upon the skin and excited a hyperpyrexia which proved fatal.

The second group includes the cases in which the throat affection was either the most or a very marked feature. Eight cases constitute this group, and they represent both very mild and very grave types of scarlatina and some of the most disastrous complications. The respective ages were 1 year, $1\frac{1}{2}$ year, 4 years, 6 years, 8 years, 10 years, 11 years, 26 years, and 32 years.

The last two of these represent two attacks of scarlatina in the same patient, contracted while nursing scarlatina patients on two different occasions with an interval of six years between each attack. The patient had never had the disease during childhood. The first attack was characterized by fever, ulcerated sore throat, and an indistinct scanty eruption which appeared but for a day. The second attack was a veritable scarlatina "Sine Exanthemate;" no rash appearing, the sore-throat being however very well marked, with fever, headache, backache, and general prostration. Two other cases with diphtheritic sore throat recovered, after a long and tedious convalescence. The remaining four died. Girl aged one year six months died of asthenia in connection with diphtheria. Boy aged one year died of coma and asthenia with the most extensive infiltration of neck I have ever seen. This case has already been alluded to on page 22.

The third case occurred in a boy of ten; there was intense fever and

manner upon the nervous system, which never gave the least sign of rallying from the onset to the close of the attack.

The fourth and fifth cases were similar to the one last described, though less rapid and intense.

CASE XII.—The older of these two, a boy, æt. 3 years, family history bad; had a faint rash; temperature 104° to 105° ; died of exhaustion on the seventh day. The evidences of nervous prostration were marked from the first.

CASE XIII.—The younger, a girl, æt. 23 months, was suddenly seized with vomiting and fever, and in a few hours a faint rash appeared, which quickly receded. Temperature varied from $103\frac{1}{2}^{\circ}$ to 105° ; death ensued in seventy-two hours. Great pallor, small, excessively rapid, irregular pulse, and utter prostration were the most prominent features of this case.

CASE XIV.—The last in this group was a plump, rosy-cheeked girl, aged 12 years. The attack began with a chill followed by high temperature and a dry, burning skin. On the second day a typical rash appeared, and in twenty-four hours she was well covered with it. The temperature stood at $104\frac{1}{2}^{\circ}$, and under the use of salicylate of soda it fell to 102° . She manifested considerable excitement on the fourth day and complained of headache and intolerance of light. During the night she became wildly delirious. Acute meningitis had developed, and on the sixth day convulsions set in, and death ensued a few hours later.

The group in which affection of the kidneys was the most conspicuous feature embraces three cases, one of which was a girl, aged 4 years, the other two were boys, aged 5 years and 13 years respectively. The latter recovered, the girl and the younger boy died.

CASE XV.—On page 31 has been given a brief sketch of this boy's first attack of scarlatina, during which his throat and ears were seriously affected; he had besides a widely diffused bronchitis. In 1874 he had diphtheria, followed by paralysis of the soft palate and of the lower extremities. In 1875 two of his sisters had scarlatina of a malignant type and died. At this time the boy had a severe ulcerated sore throat, attended with considerable swelling both externally and internally, and voice and deglutition were greatly impaired. The fever lasted a week and reached 103° . No rash could be discovered at any time, though carefully looked for. The case was nevertheless regarded as scarlatina. By the end of the week he had become quite feeble, and his pallor was so marked and peculiar as to suggest renal trouble. His mother noticed that the eyelids were swollen of a morning, and this swelling speedily involved the face. The urine was smoky, very scanty, albuminous, and contained blood-corpuscles and epithelial casts. Pulse quick and feeble, bowels constipated. Two days later he had headache, *muscæ volitantes*, nausea, and frequent attacks of vomiting. During the night he was seized with violent convulsions and became comatose. He had altogether four convulsions. He was at once placed in a warm hip-bath, the feet were placed in hot mustard-water, and cold water was poured upon his head. The venous congestion diminished under this application, and there were some manifestations of returning consciousness. He was then placed in the cold pack, but not without difficulty, as he resisted with a good deal of force. Power of speech and deglutition having returned, an infusion of

jaborandi was administered in half-ounce doses every half hour. His language was wild and incoherent, but he had now become quiet. Profuse diaphoresis and diuresis were established by morning. Jaborandi was continued at longer intervals, and on the third day the urine was free from casts but still contained some albumen.

It might be objected that the renal disease was in this case a complication rather than a part of the scarlatinal process, but this can hardly be the correct interpretation of the facts. The external manifestations of renal trouble, viz., œdema, extreme pallor, etc., developed so close upon the throat disturbance that the anatomical changes in the kidneys, and the latter must have been going on simultaneously, and the renal affection evidently must have existed for some days before the uræmic effects already mentioned declared themselves.

The younger boy was not seen by me until a short time before he died; his case has already been mentioned on page 19.

CASE XVI.—The last case was the only female child in the group. Scarlatina had already attacked two other members of the family when she was taken sick. She was 4 years of age, had been of average health, and appeared to have considerable vitality. The fever was ushered in with a rigor, and rapidly rose to 104° ; the rash was uniformly distributed over the whole body by the end of the third day; on the fourth day the urine was highly albuminous, and convulsions, preceded by vomiting, and rapidly followed by suppression of urine, set in on the fifth day. Death ensued on the morning of the sixth day.

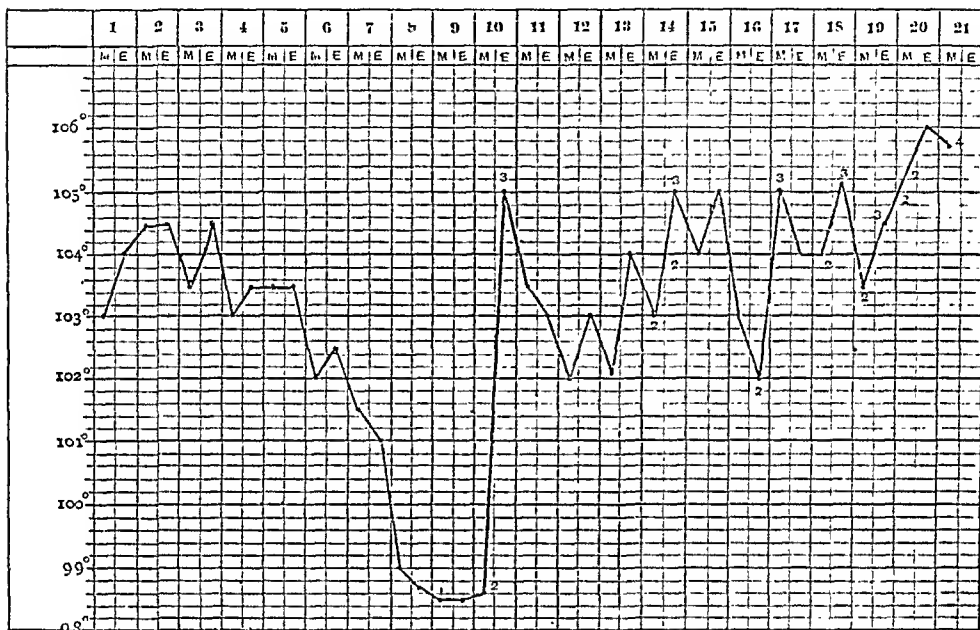
Fifteen, out of the total of fifty-eight cases, terminated in death. The following table setting forth the age, sex, type of disease, immediate cause of death, and day of death, will enable the reader to see the salient points in each case better than in the records scattered throughout these pages.

No.	Sex.	Age.	Type of disease.	Immediate cause of death.	Day of death.
1	Boy	1 yr.	Scarlatina anginosa	Coma and asthenia	6th day
2	Girl	1.6 "	" "	Diphtheria	7th "
3	"	1 1/2 "	" ataxica	Exhaustion	72 hours
4	"	3 yrs.	" "	Asthenia	12th day
5	Boy	3 "	" "	"	7th "
6	Girl	4 "	" nephritica	Uræmia and convulsions	6th "
7	Boy	5 "	" hemorrhagica	Asthenia	6th "
8	Girl	6 "	" fulminans	Convulsions	6 hours
9	Boy	6 "	" nephritica	Uræmia and convulsions	?
10	Girl	6 1/2 "	" fulminans	Collapse	38 hours
11	"	7 "	" anginosa	Septicæmia	3 weeks
12	Boy	10 "	" "	Œdema glottidis	5th day
13	Girl	11 "	" "	Heart clot	10th "
14	Boy	12 "	" hemorrhagica	Hyperpyrexia, convulsion	5th "
15	"	12 "	" nervosa	Meningitis	6th "

No. 11 among the fatal cases has already been mentioned. As seen in the table, the patient was a girl, aged 7 years, in whom the primary

disease ran a not very protracted course, and was not of unusual severity though of the anginose type. Several days after defervescence had taken place a series of abscesses began to form in the neck, the discharge from them became offensivê; there was a recurrence of rigors at irregular intervals, the temperature rose, the pulse and respiration became very frequent, complexion was muddy, there was delirium and diarrhœa, and she died on the twenty-first day. (Chart VI.)

CHART VI.



1. Defervescence. 3. Quinia administered.
2. Chills and formation of abscess. 4. Died.

The mortality in the cases recorded may appear unusually large (15 out of 58), but it must be considered that many of these cases were recorded on account of their severity, or occurred during seasons when the disease was of a peculiarly malignant type.

Morbid Anatomy.—The observations upon the morbid anatomy of scarlatina which I have been enabled to make are embodied in the notes of six autopsies of children who had died of that disease. These examinations were necessarily incomplete, and some of them were very imperfect. They are appended with a full realization of their defectiveness, but yet with the hope that they may prove of some use, as the opportunities for such examinations are rather uncommon with us, and the need of more extensive pathological investigation is generally admitted.

Autopsy No. 1.—White girl, æt. 6. Examination made twelve hours after death. She had died after an illness of only six hours (No. 8, table of fatal cases). The body was covered with livid purple blotches, espe-

cially upon depending parts. On cutting into the skin it was found infiltrated with serosity over the back. Bloody froth was issuing from mouth and nostrils.

Cranial Cavity. Scalp was infiltrated with serum, and vessels on being cut gave forth more blood than usual. Great congestion of intra-cranial vessels, membranes highly congested, sinuses distended with black liquid blood. Brain substance softened. On cutting into it the pumeta vasculosa appeared more numerous and larger than normal. Some fluid in arachnoid space of reddish colour, evidently from admixture with blood, but no rupture of a vessel could be found. Ventricles contained some fluid. Spinal cord not examined.

Thoracic Cavity. Lungs dark and mottled, œdematous in posterior portions; large amount of bloody, frothy serum flowed on cutting into them. Bronchial mucous membrane highly congested; bronchial glands large and soft.

Heart. Soft and flabby, somewhat distended with blood, which was black and unusually thin—heart muscle pale, except where it was darkened by post-mortem imbibition of colouring matter and serum of blood. Pericardiac cavity contained hardly any fluid.

Abdominal Cavity. Abdomen swollen, intestine distended with gas, liver large, dark and mottled, large quantity of black blood flowed when it was cut into. Gall bladder distended, spleen large and softened, protruded somewhat beyond costal arch. Kidneys large, highly congested, softer in texture than normal, capsule easily separated, urinary bladder contracted and empty. Case related on page 34.

Autopsy No. 2. (No. 7, Fatal Case, see Table).—L. A., boy, æt. 5. Fourteen hours after death; patient had died on the sixth day of disease. Bloody froth issuing from mouth and nares; a sanious, highly offensive fluid oozing from anus; whole posterior aspect of body of a deep purplish hue. The whole integument except the face of a rough bark-like feel and appearance, with ecchymoses here and there; thick epidermic flakes, edge partially detached, or raised up by dried blood gave the skin this peculiar appearance. On cutting through the integument the deeper layers and subcutaneous areolar tissue were seen infiltrated and œdematous. This patient's case has been related on page 32, as one of scarlatina hemorrhagica.

The cranial cavity was not examined.

Thoracic Cavity. Lungs congested, and œdematous in dependent portions. Bronchial mucous membrane swollen and congested, tubes containing frothy mucus; bronchial glands large and softened. The pericardium containing a small amount of reddish serum, bloodvessels coursing over its surface congested in arborescent patches. No fibrinous exudation; heart paler than normal when blood had been washed out of it, but at first it looked dark; muscular tissue in a state of granular degeneration; valves normal; blood imperfectly coagulated, black and viscid even in left chamber; blood cells were shrivelled and crenated, and the blood contained numerous bacteria and granular debris; liver large and congested; kidneys in the same condition; spleen less so; bladder containing very little urine of a dark colour; intestinal mucous membrane intensely congested and swollen, follicles very prominent, and here and there erythematous patches.

Autopsy No. 3.—This was a case which I had not seen during life, and in which a very incomplete examination was made twenty-four hours after the patient's death. The subject was a male about nine years of age.

There was no sign of eruption, but the skin was desquamating; the abdominal organs only were examined; liver and spleen dark, enlarged, and congested; kidneys large, and of a dark mottled colour, much blood flowed when they were cut into. The small quantity of urine found in the bladder was dark, albuminous, and contained blood cells, fibrinous and epithelial casts. Intestine distended in some parts, other parts contracted; Peyer's patches large, softened, and congested; here and there were erythematous patches.

Autopsy No. 4.—This was a boy 12 years of age, who had died under the care of another physician, through whose kindness I was permitted to be present at the autopsy. The skin was congested and discoloured in spots, especially on the back; lungs somewhat congested in lower and posterior parts; heart contained white, rather firm clots; aortic valves thickened, congested, and with fibrinous bead-like exudation on their free border; pericardium inflamed, and containing a small amount of sero-fibrinous exudation; kidneys congested; bronchial mucous membrane congested; left pleura had some fibrinous exudation.

Autopsy No. 5. (Case 1, Table of Fatal Cases.)—Boy about 1 year old. Sixteen hours after death: cranial cavity and neck were not examined, as positive injunction to leave these parts untouched had been given by the parents. Lungs were highly congested throughout; bronchial membrane in the same condition; heart distended to its full capacity with dark fluid blood. The neck was enormously swollen and indurated; there was no lesion of the skin visible; patient had died by coma and asthenia, the case has been reported on page 22.

Autopsy No. 6. (Case No. 4, Table of Fatal Cases.)—Girl, æt. 3 years; she died on twelfth day of disease of asthenia. Examined ten hours after death; no signs of eruption, skin exceedingly white, only very slight post-mortem discoloration posteriorly; muscular tissue showed granular degeneration, striæ here and there quite obscured or wanting; heart pale and flabby, and with comparatively little blood in its cavities; the blood was fluid in part, the clots were not very firm; there was but little pulmonary congestion except at base; the pleuræ and pericardium were not congested; liver, kidneys, and spleen were congested, bladder was full, and the urine contained some casts, and a little albumen. The mucous membrane of the stomach was congested in arborescent patches, and was swollen and softened; the lymphatic glands appeared larger than normal; the blood was viscid and dark in the abdominal vessels. This case has already been mentioned on page 34 as one of scarlatina ataxica.

Treatment.—Scarlatina is a self-limited disease, whose course there is no means of shortening, but which may be aggravated and protracted by too active and unwise therapeutic measures.

No specific remedy for the effects of the parasite has so far been discovered, no antidote to it has as yet been found, and no method is known to our art by which its departure from the body can be expedited, or its elimination be rendered complete.

The clinical history of scarlatina varies so exceedingly, and successive epidemics differ so greatly from one another, that until the peculiar parasite was discovered, the question was more than once asked if several different diseases had not been included under this one name.

In a large number of cases the disease is so mild that there is no need of treatment. In many other cases it is of such destructive violence, so abrupt in its access, runs its fatal course with such fearful rapidity, that the best efforts of even the most devoted and skilful will avail nothing. Yet there is a very large intermediate class, where the physician will find an ample field for the exercise of his art.

In entering upon this part of the subject two methods of dealing with it presented themselves. One was to give in connection with each case a detailed account of the plan of treatment pursued; the other was to simply set forth the conclusions which had been reached, and which appeared justifiable or actually demanded by my clinical experience. According to the former much repetition would have been unavoidable, with much waste of time and space. Besides, it would have been not only tedious and unprofitable, but impracticable, as all the clinical material has not been reported in detail. According to the latter, conciseness and perspicuity would be gained, and the experience gained in the observation and treatment of many other cases besides those forming the basis of this paper could be utilized; therefore this plan was preferred. In all infectious and contagious diseases, the physician's first care must be to prevent their further extension. This, it must be confessed, is not as well done as the importance of the subject demands. In private practice numerous obstacles present themselves, and it is fortunate for mankind that the infection of scarlatina is not more strong, and the susceptibility to it not so general as in the case of measles.

Prophylaxis.—This requires first of all the segregation of the patient whenever scarlatina breaks out in a family. Considerations of convenience, inadequate house room, lack of sufficient help in the house, so as to enable some one to give undivided time and attention to the care of the sick are practical difficulties which every physician will encounter, and which he will often find it impossible to overcome. The most remote chamber in the house should, other things being equal, be selected for a scarlatinous patient. It should be well lighted and ventilated, and the temperature should not be allowed to exceed 75° Fahr. Carpets, hangings, and all unnecessary articles of furniture should be excluded. The vessels used for the excreta should be disinfected and the contents should be speedily removed and destroyed. The walls should have no paper but ought to be painted and varnished, so that they can be easily and thoroughly cleansed. The bed linen ought to be changed daily, and immediately be subjected to a high temperature which destroys the vitality of the infecting agent. After the recovery of the patient, all articles of small value such as comforts and the like should be burned. The hair mattresses, and hair and feather pillows should be cut up, the covers destroyed, and their contents exposed to a sufficiently high temperature before they are made over again. The room itself, when the floors and furniture shall have been

thoroughly cleansed, ought to be shut up and thoroughly disinfected by means of burning sulphur, or the so-called "ozonizing powders" may be employed. The latter are composed of equal parts by weight of oxalic acid, peroxide of manganese and permanganate of potash; the mass is placed in a dish, or in dishes throughout the room, and moistened with water. This method of disinfecting the chamber is quite effective when enough of the powder is used. The doors, windows, and chimney must have been closed.

The clothing worn by the nurse should be burned, and the physician ought certainly not to visit houses where there are unprotected children immediately after leaving the sick-room of a scarlatinous patient. A long ride in the open air and a change of clothing appear to be a very reasonable precaution on his part.

It is highly probable that in future more wide reaching prophylactic measures may have to be enforced as we come to accept the doctrine promulgated by Eklund, and already mentioned in these pages. The possible origin of scarlatina by infection from domestic animals, and the admitted facts that infected milk, etc., may become the means of propagation of the disease, also admonish us that we do but ill fulfil our duties as guardians of the health and lives of communities when we content ourselves with simply prescribing for those actually sick of scarlatina, without investigating the origin of the disease, and endeavoring by all possible means to arrest its further propagation.

The use of belladonna as a prophylactic against scarlatina has long since been discontinued, as it has been shown by conclusive experiments to be entirely worthless. For several years I have prescribed small doses of salicylic acid for the prevention of scarlet fever. Although I believe it has some prophylactic power, yet I am far from certain as to its actual value.

The treatment of the patient should be based upon the consideration of his actual condition rather than upon the name of the disease. In the lightest form of scarlatina no medicinal interference whatever is indicated, and when resorted to at all is rather to satisfy the anxiety of the family to have something done. Some cooling diaphoretic with syrup of marshmallow, syrup of lemons, or syrup of red raspberries, properly diluted, etc., may under such circumstances be prescribed. Ordinary prudence as to diet, quiet, etc., should be enforced.

In the class of cases characterized by moderate eruption and fever, the following plan has been carried out with satisfactory results: The patient should be lightly clad, and not be permitted to have any worsted material next to the skin. Cool or cold drinks in small amounts and at short intervals are not only desired by the patient but are actually beneficial. The diet most suitable is milk; light soups or farinaceous preparations are also admissible. Lemonade is often very grateful to the patient and may

be taken cold. If the throat should be affected to such a degree as to make it necessary, the patient may be allowed to swallow small pieces of ice, and a cold water compress should be applied to the front of the neck from ear to ear. This will often reduce the throat affection in a few hours. When there is much itching and burning of the skin the surface should be gently anointed with olive oil. When the temperature runs up to 104° and over, and remains at so high a figure for any length of time, the external use of cold or cool water in some way should not be delayed. It is the most speedy, certain, and safe agent to accomplish the reduction and prevent the evils of protracted pyrexia. In the way of a prescription the following formula, modified according to the age of the patient and other circumstances, has often appeared serviceable: *R. Potassæ Citratis*, ʒj.; *Syr. Limonis*, ʒiij.; *Spts. Etheris Nitrosi*, ʒj.; *Aquæ Destill.* ʒʒj.; *M. et S.* Take one teaspoonful every 2 or 3 hours.

In some cases it may be desirable to combine a small dose of tinct. aconite, say half a drop, with each teaspoonful, to be repeated at appropriate intervals. Sleeplessness and nervous excitement may at times require the administration of Tully's powder, or bromide of sodium, and even chloral.

The use of purgatives beyond what may be necessary to keep the bowels in as nearly a normal condition as practicable is contraindicated. One must not lose sight of the fact that there is in scarlatina a strong tendency to inflammations of the mucous as well as the serous membranes, and in many cases a spontaneous diarrhoea sets in towards the close of the disease, which may easily be aggravated beyond what is desirable or even safe to the patient.

Large and spoliative doses of quinia and salicylic acid are to be avoided in this class of cases as not required and capable of mischief, if in no other way, by irritating and disturbing the stomach, and sometimes the bowels.

In the group of cases characterized by intense hyperæmia and high pyrexia, there is greatly increased heat production in the interior of the body, due to implication of the nervous system, while owing to the inflammation of the skin, the heat loss from the general surface is much diminished. The destructive effects of continued high temperature are not slow in manifesting themselves. Under such circumstances the first and most important indication is to reduce the temperature. To accomplish this safely and satisfactorily is not always easy. Salicylic acid, salicylate of soda, and quinia are the most potent agents by which the excessive generation of heat may be lessened. But there are general objections to them all, and there often are special reasons for not giving or continuing to give them in individual cases. To obtain their full effect they must be given in large doses, and the necessity for their administration speedily recurs. They are difficult of administration in very young patients, and their local effects are often irritating.

When given in full antipyretic doses they are spoliative in their action upon the blood and depressing to the nervous system. Hence in a disease consisting in a toxæmia with strong tendency to merge into an adynamic state, they must be resorted to with caution, and their administration must be regulated with sound judgment. I have found quinia the most safe of the three. When giving it at all, I prefer to give three or four large doses at an hour's interval, and then withhold it altogether. During the following twenty-four hours there is usually a fall in the temperature, and when the rise again becomes excessive the drug may be again given in the same way. The same plan will be found advantageous in administering salicylic acid and salicylate of soda. The former of these two is the least eligible of the group. Salicylate of soda has the advantage of being less irritating and unpalatable than the others, and it is often a good substitute for quinia in this disease and for the purpose named.

Of all the means to lower temperature, reduce the hyperæmia of the skin, and restore its activity, cold water is the best. It is strange that even at this late date the application of hydrotherapy to the treatment of the exanthematic fevers should still be regarded as an experiment, and that we should still remain in the bondage of the false pathological conception which regards the cutaneous inflammation of scarlatina as an eruption of peccant humours. It is now one hundred and sixty years since Dr. Hancock, Rector of St. Margaret's, Lothbury, England, published his pamphlet entitled, "*Febrifugum Magnum, or Common Water the Best Cure for all Fevers*," "which contains many sound observations and valuable facts detailed in the quaint language of the time." Ninety-five years have elapsed since Currie wrote upon this subject, and advocated the use of cold water in the treatment of scarlatina. From time to time others have again endeavoured to impress upon the medical profession the great fact that, as a febrifuge, common water is safe, certain, and expeditious in its action. Currie's rule for the use of cold-water ablutions in scarlatina was: "It is invariably safe and beneficial when the heat of body is steadily above the natural temperature, and when there is no sense of chilliness present, and no general and profuse perspiration." Bateman, however, found it sufficient to leave the following instruction with the nurse: "Use the cold-water ablutions whenever the skin is hot and dry." In spite of the teaching and example of these and many others, I doubt if many practitioners at present avail themselves of this important agent in the treatment of this and kindred diseases. My own experience with it has been so favourable that I am bound to speak highly of it, and on reviewing the history of many of my cases I regret that its use was not more frequently resorted to. The manner of application must necessarily vary with the age and condition of the patient, as well as with the type of scarlatina one has to deal with. In some cases immersion in a bath is the best, but this is not always practicable; in others, again,

the patient may simply be wrapped in a sheet wrung out of water at a temperature of 70° Fahr. In others, again, sponging the surface with cold or tepid water, or applying cloths wet with water of varying temperature may be preferred. In two of my patients, whose cases have been given in these pages, the results obtained by means of this agent were certainly most gratifying.

The variety of scarlatina in which the throat affection is the most conspicuous feature often presents great difficulties, especially in young children, who cannot make use of gargles, and always resist any efforts to make topical application of any kind. The swelling of the tonsils and fauces may sometimes be reduced and much relief given by letting the little patient suck ice, which is generally acceptable. The glandular swellings and infiltration of the neck can in many instances be controlled by the use of cold water compresses. When practicable, detergent gargles should be used, and perhaps chlorate of potash with dilute hydrochloric acid and honey dissolved in water is as good as any of the numerous formulæ in vogue at the present day. I have often seen good results from blowing powdered sulphur or benzoate of soda through a quill into the throat when the ulcerative stage has been reached. The early opening of abscesses when present, and the frequent syringing of the meatus with warm water when there is a purulent discharge from the ear, should never be neglected. Hot fomentations should always be applied when suppuration cannot be prevented. Beef-tea, wine, and the tincture of chloride of iron and digitalis are often demanded. The reduction of the temperature and pulse by means of depressing agents, such as aconite and veratrum viride, should never be attempted in this class of cases. The use of such agents is mentioned simply to discountenance it.

When scarlatina is of the ataxic type, with tardy and scanty rash, iron and stimulants are required from the first. I have on various occasions prescribed tinct. belladonna in such cases, but in general without much benefit. It was in this class of patients that Currie obtained such good results from cold affusion, and I have seen cases where the patient was apparently saved by this means. For it must be borne in mind that under such circumstances the temperature usually runs very high, although the skin may be pale and the extremities cold. "The stronger the action the quicker the internal reaction which ensues." (Sequin on Thermometry.)

It is true that extreme temperatures are powerful remedies that may kill or cure; but the class of cases to which I now refer strongly tend to a rapid and unfavourable termination, and it is believed that hydrotherapy constitutes the only hope in otherwise desperate cases.

Carbonate of ammonia has been much extolled as a remedy in scarlatina, and it would naturally appear specially indicated in the ataxic form of the disease, on account of its powerful action as a diffusible stimulant.

I have used it extensively, and have found that in the ordinary run of cases it is not needed, and in those of the most violent type it does no good. Besides it irritates the stomach, and promotes or aggravates diarrhœa, two very strong objections to its use. But it is of value in a certain class of cases in which there is bronchitis or pneumonia, and where the stomach is not irritable, and when there is no diarrhœa. The cases in which there is diarrhœa of any severity require the use of hydrotherapy, and are rarely controllable by any other means.

When the kidneys are involved, I have found the use of dry cups over the loins, the wet pack, and jaborandi to compose the most successful remedies. The case of W. M., reported in these pages, furnishes a good illustration of the beneficial results that may be achieved by the two latter. The infusion of jaborandi has appeared to me more reliable than the fluid extract, but pilocarpine is, under certain circumstances, preferable to either.

Scarlatina hemorrhagica requires a plan of treatment that will lessen the intense cutaneous hyperæmia, and tend to restore the arrested functions of the skin. Cloths wrung out of water at a temperature of 85° or 90°, applied to the surface, and changed every hour or two, prove serviceable in this respect, and are both soothing and refreshing to the patient.

These cases soon show signs of exhaustion, and demand a supportive regimen from the very beginning.

In scarlatina fulminans no treatment does any good. The extreme violence of the attack, and the rapidity with which it proves fatal, afford no time for the action of remedies. Such cases are, from their very nature, hopeless.

ARTICLE II.

A CASE OF LODGMENT OF A FOREIGN BODY IN THE CAVITIES OF THE NOSE, ORBIT, AND CRANIUM, WHERE IT REMAINED FIVE MONTHS; REMOVAL BY OPERATION; SUBSEQUENT TREPHINING FOR PUS IN THE BRAIN; DEATH; AUTOPSY. By HENRY D. NOYES, M.D., of New York.

LEWIS EVERETT AVERY, 19 years of age, living in Sullivan County, New York, a farmer in robust health, was wounded in the face by the explosion of a gun while shooting snipe at five o'clock in the morning of September 18, 1881. By the explosion, the lock of the gun was blown off, and also the piece called the breech-pin, by which the barrel is fastened to the stock. Most of the stock remained attached to the barrel. He was knocked senseless, and his brother, who was a little distance behind him, says that he heard something whiz past as the gun exploded. The boy was conveyed to his home in a wagon, a distance of half a mile, and remained unconscious about four days. A physician was called immediately after the receipt of the injury, who dressed the wounds, and said

that the right eye was destroyed, and also said—quoting from a letter from the boy's father—"that there was something there which he did not understand."

The patient did not vomit after the injury, and when he came to his senses he did not afterwards lose his mind, nor have any delirium. He remained in bed for four days, and was attended by the physician for about three weeks. He soon afterwards came to New York to get advice, and presented himself at the New York Eye and Ear Infirmary on the 5th of October, 1881. In the notes of the house-surgeon it is said that the eye was in a state of general inflammation, and that there was a large scar extending from the middle of the nose outwards and upwards along the inner third of the eyebrow. There was a fistulous opening near the inner end of the brow, and a probe struck upon a hard body, whose character was not verified, and then passed down towards the nose. The suggestion that the breech-pin of the gun might possibly have lodged there was emphatically dissented from by both the patient and his brother. Neither of them believed that it could be possible, and the brother asserted that he heard the breech-pin whiz past him at the time of the explosion.

The eye was in a condition of suppuration, and was treated by warm applications. A free escape of pus occurred from the sinus in the brow, from which also two small pieces of wood came away. The eyeball shrank, the swelling of the orbital tissues abated, the discharge both from the fistula and from the nose gradually decreased, and the patient returned home at the end of about three weeks.

Nov. 25. He returned to the Infirmary for inspection, and there had been a notable improvement in the appearance of the parts; healing had occurred very perfectly, his general health was good, his intelligence unimpaired, and he suffered no inconvenience.

Feb. 8, 1882. He came again to the Infirmary with a view to having some attempt made to repair the deformity of his face.

13th. He was intrusted to my care for the performance of a plastic operation. Not having seen him before, I examined him carefully and found his condition at that time to be as follows: He was a stoutly-built, unimpressible young man, rather slow of speech, apparently in good health, with a deep scar extending from the middle of the fractured and depressed nose along the inner cantus of the right eye upwards and outwards to about the middle of the brow. The upper lid was closed, the palpebral fissure was below the normal level, a fistulous opening existed (see Fig. 1) at the inner border of the eyebrow, the right eyeball was atrophied and immovably adherent to the tissues at the inner portion of the orbit, and from the nostrils there was an offensive discharge, which suggested the presence of carious bone. The nasal bones were badly sunken, and the tip of the nose turned up, as shown by the engraving. On exploring the nasal cavity, by the aid of a mirror and gaslight, a foreign body was discovered in the middle of the right side, which clicked like iron when touched with a probe. The finger passed through the mouth into the posterior naris, came in contact with this body, and the patient submitted to a pretty vigorous attempt at its extraction, when it was seized in front by a pair of strong polypus forceps, and pressed upon from behind with the forefinger of the other hand carried up behind the soft palate. The mass could not be stirred, and I was soon convinced that it extended into the orbital cavity. Nothing more was done at that time, and the case was reserved for operation on the following Friday, February 17. The inten-

tion was to remove the foreign body, and reserve any procedure of a plastic character for a future time. The precise extent and situation of the body was unknown. Its discovery had been a surprise. The patient was etherized. As a preliminary step, the patient being upon the back, the posterior

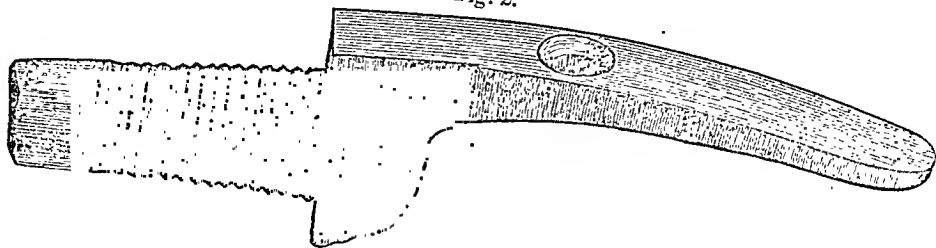
Fig. 1.



nares were plugged with sponges, a proceeding which was accomplished with considerable difficulty, but it was effectual, inasmuch as no blood whatever escaped into the throat during the operation. An incision was made through the scar in the middle of the nose, and the foreign body searched for at the inner side of the orbit. It presented at that point a squared surface about half an inch across, and when exposed was grasped by a pair of common pliers, which took a firm hold of it, but it was immovable. The dissection was carried further up along the brow, and the foreign body was traced upward, outward, and backward towards the roof of the orbit. It was proved that the foreign body was iron, not only by its appearance, but by touching it with an electro-magnet, and in subsequent steps of the operation the magnet was valuable as a means of distinguishing a bony surface from the foreign body when the parts were concealed by blood. The dissection towards the roof of the orbit was made mostly with seissors, guided by the forefinger of the other hand, and it was found that the mass disappeared through the roof of the orbit at its upper and outer angle at some distance behind the lachrymal fossa. At this time an extensive wound had been made into the cavity of the orbit and nose, and the ethmoid cells had been opened, but the foreign body was singularly hidden from view, below the margin of the orbit. In order to expose its lower part, it was necessary to clip away with bone-forceps the edge of the orbit, and at length its full extent was brought to view.

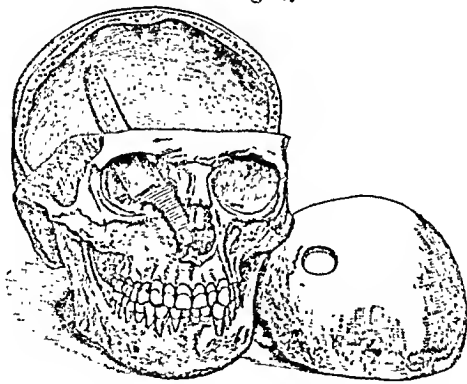
The explanation of the difficulties which were encountered at this stage of the operation is found in the peculiar form of the foreign body, as shown in Fig. 2.

Fig. 2.



The rounded end of the piece of iron, lying in the right nasal fossa, and pressing firmly against its floor, was now seized with the pliers, and gently lifted forwards. It was then caught in a line parallel to its long axis, and with great care very slowly extracted by pulling downwards and to the left across the median lines. It laid in such a position that the shoulder above the cylindrical part rested upon the floor of the orbit. The tapering extremity passed beyond the roof of the orbit to the distance of an inch and a half, namely, to near the place of the screw hole, where it was fastened to the stock of the gun. It proved to be $4\frac{7}{8}$ inches in length, or eleven centimetres; its breadth was about a half inch, or twelve millimetres, and its weight was two ounces, five drachms, and twenty-five grains, or about eighty-four grammes. The cylindrical portion is marked with a thread of a screw, and forms the chamber of the gun, and on one side is a hole, through which the nipple passes. In Fig. 3 the foreign

Fig. 3.



body has been inserted into a skull in the same position which it occupied in the patient. The frontal bone has been taken away, and is placed beside the skull. The round hole in the frontal bone denotes the place where, at a subsequent time, the trephine was applied to reach an abscess in the brain. The shrunken eyeball was next excised, and a free communication established between the apex of the orbit, where the foreign body had been lying, and the conjunctival sac. The wounds through the skin were adjusted, the palpebral fissure, by a little dissection, brought up

to its proper level, and the edges united by sutures. No other attempt was made to correct deformity.

When the foreign body was removed, the roof of the orbit was carefully explored with the forefinger, and the hole in it was so small that it just admitted the tip. When the operation was concluded, the finger, passed through the palpebral opening, could easily touch the aperture in the roof of the orbit. A tent was introduced between the lids back to this point. It was believed that by so doing a sufficient facility for drainage would be secured, inasmuch as the track of the body through the nasal cavity procured another outlet. The operation occupied rather more than two hours, and the hemorrhage was not severe.

It may be remarked that the deep situation which the foreign body occupied, not only concealed it from view, but from exploration by the finger, except in the nasal cavity. The patient had suffered no pain, was entirely free from dizziness, was unconscious of any inconvenience, except the discharge from the nostril and from the fistulous opening in the brow; his intellect was clear, his memory was unimpaired, and in every essential respect he considered himself well. The deformity of his face was the exclusive reason for his seeking advice. He was of resolute character and fair intelligence.

The reaction during the night after the operation was moderate. His temperature was 103° F., and pulse 100. The sponges which had been left in the posterior nares caused him serious discomfort, and they were removed. He was put upon tincture of aconite root one drop and a half every half hour, until eight o'clock the next morning, when his pulse was 90 and the temperature $101\frac{3}{4}^{\circ}$ F. The tent was removed from the orbit, allowing some pus to escape. He had severe pain in the head, and iced applications were ordered. In place of the tent a soft rubber drainage tube was introduced. The aconite was continued.

19th. Second day after the operation. Pulse 72; temperature 98° F. Has slept well. Is comfortable.

20th. There is considerable swelling of the parts. The orbital cavity was well syringed out with a two per cent. solution of carbolic acid. There is only a slight discharge from the nose.

22d. At 6 A. M. the temperature $99\frac{3}{4}^{\circ}$ F., and pulse 72. At 4 P. M. the temperature $100\frac{1}{2}^{\circ}$ F., and pulse 68. The tongue dry and covered with sordes. The bowels constipated. Ordered a saline laxative and sweet spirits of nitre.

23d. At 8 A. M. the temperature was $101\frac{1}{2}^{\circ}$ F.; pulse 62, and irregular. The patient was drowsy and indisposed to talk. The tongue was covered with a dry brown crust, sordes upon the teeth and roof of the mouth. The patient had no appetite, and complains of pain in the occiput. Rubber bag filled with ice applied to head.

To-day the patient was seen in consultation by Dr. R. F. Weir. It was suggested that pus might be retained in the apex of the orbit, and an exploration of the parts through the palpebral opening gave vent to a small quantity.

The wounds in the skin had been opened on the *third* day, and gave vent to secretion, and to-day, the sixth day, the cavity of the nostril was easily accessible through the operation wound. In order to provide a more free escape of matter, a hard-rubber Eustachian catheter, considerably curved, was passed up along the track which the foreign body had occupied towards the roof of the orbit, and left in position. In the evening the

paresis of the left side of the face made its appearance. He thought that the lesion in the orbital convolutions had extended to the medullary matter of the *second* and *third* frontal convolutions, and that the paresis depended upon an œdematous condition of the medullary substance rather than upon a distinct abscess; the left half of the tongue was paralyzed as well as the face. The absence of all convulsive movements upon the paralyzed side was regarded as evidence against meningitis, and Dr. Janeway thought that the cortex was not involved. He regarded it as probable that an abscess existed in the vicinity of the place where the foreign body had been lodged.

At 3 P. M. consultation was held with Dr. H. B. Sands, Dr. T. T. Sabine, and Dr. L. A. Stimson, and it was decided to trephine the skull and search for an abscess. The place decided upon at which to open the skull was in accordance with the views Dr. Janeway expressed concerning the probable pathological condition of the brain. The patient was etherized and the trephine used at a point three inches above the external angular process of the frontal bone, just in advance of the coronal suture; this was in front of the middle meningeal artery, and intentionally anterior to the motor tract. The dura mater was not injured by the trephine. It pressed upward into the hole, but *no pulsation* could be observed. It felt firm and rather tense. A crucial incision was made through it, and the surface of the brain appeared slightly congested. An aspirating needle was carried downwards and forwards towards the orbital opening to the distance of one and three-quarter inches, at which depth a dark brown fluid appeared in the syringe followed by healthy pus, and this was succeeded again by a dark brown fluid. It was estimated that five drachms of purulent matter were removed. With one finger in the orbital opening, a probe was passed from above downwards to meet it, and a drainage tube was carried through the trephine hole down through the orbit, passing through the substance of the brain. A four per cent. solution of boracic acid was syringed through the tube three times a day, and its position changed.

6th. Temperature $100\frac{1}{2}^{\circ}$ F. to 101° F.; pulse 90 to 78.

7th. Second day after the trephining. A probe was passed through the brain substance about an inch and a half, downward and forward, and gave exit to half an ounce of yellow pus which welled up. Poultices were continued to the side of the head. Five grains of the sulphate of quinine with half an ounce of whiskey were given every two hours until four doses were taken. Temperature 100° F.; pulse 98 to 103. The patient suffers great pain in his right arm and shoulder. Paresis of the left forearm and hand remains unchanged. The paralysis of the tongue and face seems to have been partially relieved.

8th. The wound was probed from above through the trephine hole, and about one drachm of pus removed. The quinine and whiskey were continued, viz., 20 grains of quinine and about two ounces of whiskey daily. The patient complains of difficulty of breathing upon the right side, and passed a very restless night. Wishes to be turned over frequently. There is little discharge from the wound, and the drainage-tube appears to be choked. It was removed and a larger one substituted. Temperature $101\frac{1}{2}^{\circ}$ F.; pulse 100.

9th. The patient passed a comfortable night, and at six o'clock in the morning asked for beefsteak and a cup of coffee, which were given to him. At 12 M. the temperature was 104° F.; pulse 101. When the wound

was dressed the probe was introduced and considerable pus was liberated. He still complains of difficulty of breathing in the right side of the chest and pain in the right arm. Linseed poultices with mustard were applied to the back and chest. Careful examination does not discover any lesion of the lungs. A dose of salts was given. Ordered quinine in 10-grain doses. At midnight the pulse was 104, and temperature $101\frac{1}{2}^{\circ}$.

10th. Temperature ranges from $100\frac{3}{4}^{\circ}$ F. to 103° F.; pulse from 101 to 90. The trephine hole is occupied by a mass of granulations and blood which was torn off, and some drops of dark-coloured pus escaped. All the dyspnoea and pain in the shoulder have disappeared, and examination of the chest reveals no lesion of either lungs or pleura.

11th. Temperature $101\frac{1}{2}^{\circ}$ F. to 100° F.; pulse 90 to 98, reaching the highest point about noon.

12th. The patient examined in consultation by Dr. Janeway. The temperature $100\frac{1}{2}^{\circ}$ F.; pulse 98. There is partial anæsthesia of the left hand, especially of the index finger. The sensation of the left leg is about the same as of the right. The grip of the left hand is about 25 per cent. less than that of the right. By striking over the tendons of the wrist and leg no increased reflex is noticed. Ordered 10 grains of quinine every six hours, with half an ounce of whiskey every two or three hours during the day.

13th. Pulse quick, feeble, and irregular. Considerable pus discharges from the wounds, and syringing into the orbital cavity causes the fluid to pass up through the trephine hole, indicating that free communication exists between the two openings, and the patient has been lying most of the time upon his left side and with the head thrown back. This position has made the exit of pus from the trephine hole easier than from the opening in the roof of the orbit. Temperature $100\frac{1}{2}^{\circ}$ F.; pulse 94 to 120.

14th. Temperature $100\frac{1}{2}^{\circ}$ F. to $99\frac{1}{2}^{\circ}$ F.; pulse from 114 to 92. He continues to take 40 grains of quinine daily. Very early in the case the optic nerve of the left eye was examined and found to be œdematous, presenting the appearance of papillitis or choked disk; to-day it was again examined, and the condition found to be more pronounced, and hyperæmia more marked. The patient is perfectly intelligent, is in entire possession of his intellectual faculties, does not suffer great discomfort, and behaves well. The granulating surface in the trephine hole bleeds freely when touched.

15th. Temperature $99\frac{1}{2}^{\circ}$ F.; pulse 92 to 112, reaching its highest point about noon.

16th. Temperature 99° F.; pulse 85. The patient has some frontal headache upon the right side. The quinine was reduced to 20 grains daily. He eats well. His diet for the preceding two weeks has been largely of ice-cream, of which he has taken from two to three quarts daily. Hearing and vision good. Paresis about the same.

17th. Temperature 99° F.; pulse 78 to 85, and slightly intermittent. Pus escapes from the orbital opening; water passes through both openings when the cavity is syringed. The left arm has become smaller and softer than the right. The patient complains of headache over the right frontal region, extending to the occiput. Ice bag applied.

18th. Temperature 99° F.; pulse 85 to 98. Ice-bag to the head continued.

19th. Temperature 99° F.; pulse 75 to 90. It was found upon ex-

aming the orbital opening that pus was retained in its vicinity, and by using a long probe bent to a sharp curve, it was discharged.

The paralysis of the left side of the face and tongue has for several days been very marked; but at no time has it affected the orbicularis muscle. The patient takes 20 grains of quinine daily.

20th. Shortly after taking a dose of whiskey the patient vomited. It was found that pus existed in the vicinity of the trephine hole, in the region posterior to it. After its removal the patient was more comfortable, and his pulse stronger and more regular. He now begins to be indifferent to the state of his bladder, and is apt to wet the bed. Temperature 99°F.; pulse 90 to 76, and irregular.

Since the granulations at the trephine hole have become redundant and inclined to bleed, they have been cut down with Jarvis's snare, armed with piano wire No. 7, and the subjacent brain tissue has been removed in the same way, thereby affording easier escape for the pus.

21st. Temperature 99°F. to 99½°F.; pulse 78 to 88. About one drachm of very offensive pus discharges from the openings at each dressing. The granulations are removed twice a day. Quinine and whiskey are continued. Syringing through the brain substance is no longer performed, and the probe is not used for evacuating the pus.

From March 22d to March 25th the temperature ranged from 99½°F. to 100°F.; and the pulse from 88 to 103. On the night of the 25th the patient vomited.

26th. The patient was restless during the early part of the night. He received three enemata during the day, but without effect upon the bowels.

Fearing that pus remained concealed and was unable to escape, I passed my finger through the orbital opening and found a pocket of pus. The finger went backwards to the distance of three inches, and found the brain substance badly broken down.

Dr. Janeway saw the patient again, but found no evidence of pyæmia or meningeal complication. The temperature of the brain taken by introducing the thermometer through the trephine hole was 101°F., in the axilla 100½°F. Pulse intermittent at times; 96 to 110.

27th. The patient had a restless night, and vomited three times within an hour. At the morning dressing, the wound of the orbit was full of disorganized tissue, which had to be removed by the snare, and a large slough soon followed, together with considerable pus. At the afternoon dressing I removed an additional quantity of sloughy material, and brought away a large necrotic mass, similar to that removed in the morning. The two together appeared to constitute the cyst which had inclosed the extremity of the foreign body in the brain. The slough was gray and fibrous upon one side, presenting a distinctly membranous character, and upon the other side was covered with broken-down white brain substance, with numerous points of capillary hemorrhage. The soft parts around the orbital opening have contracted together so as to interfere with the escape of fluid and with the dressing, and, therefore, the opening was enlarged by an incision upon its temporal extremity. The bowels have been constipated for some days, and no relief has been afforded by enemata. Ordered one drop of croton oil. Pulse very intermittent.

28th. Has had a bad night, and has nausea and vomiting. Free hemorrhage has taken place from the orbit, the cavity is occupied by a clot and granulations which protrude about one inch. When this was removed hemorrhage continued to occur, and was with difficulty arrested.

The patient is evidently much worse. Temperature $103\frac{1}{2}^{\circ}$ F.; pulse 108. The temperature continued to rise, and at 10 A. M. was $104\frac{1}{2}^{\circ}$, and the pulse jumped to 160. During the day the patient gradually sank, and died at about 1 o'clock on the morning of March 29th, which was the thirty-ninth day after the removal of the foreign body.

He continued perfectly intelligent up to within *two* hours of his death, although indisposed to talk.

Hypodermic injections of whiskey were giving during the day, and beef-tea per rectum. There were no convulsions, nor additional paralysis, nor delirium. The patient could always be aroused, and did not suffer severe pain.

From the 6th of March to his death he was vigilantly cared for by Mrs. Dr. Pratt, of Salt Lake City, who performed much of the dressing and aided the House Surgeon, Dr. Charles Orr. He also had the constant services of two nurses.

The *autopsy* was made twelve hours after death, by Dr. W. H. Welch, assisted by Drs. J. L. Minor and Charles Orr. The following is Dr. Welch's report.

Autopsy.—By request only the head was examined.

External Appearances. The upper part of the nose is sunken in in consequence of depression and partial loss of the nasal bones. Immediately below the right eyebrow there is a gaping hole, 3 ctm. in transverse, 2 ctm. in vertical diameter. This hole extends horizontally along the upper margin of the upper eyelid, which is thereby somewhat depressed. This hole extends through the integument, subjacent tissues, and orbital plate of the frontal bone into the cranial cavity; the right eyeball is absent; there is a round hole $\frac{3}{4}$ ctm. in diameter, a little to the right of the median line of the nose, and on a level with the lower margin of the orbit. A probe can be passed through this hole into the nasal cavity; from this hole can be traced a line of cicatrix upwards to the gaping wound first described, and obliquely downwards for a distance of 3 ctm. to the left side of the nose. Another cicatricial line extends from the small hole for $3\frac{1}{4}$ ctm. along the right side of the nose to the nostril.

Near the roots of the hair on the right side there is an opening $2\frac{1}{4}$ ctm. in diameter through the integuments and frontal bone into the cranial cavity. This opening is situated 5 ctm. from the median line and 7 ctm. from the orbital margin of the frontal bone; around the margin of this opening, posteriorly and inferiorly, the bone is laid bare for a distance of 2 ctm. A Λ -shaped cicatrix 5 ctm. long extends from the opening downwards towards the ear.

Brain and Membranes. Upon removal of the calvaria, openings are found in the dura mater which correspond in situation to those existing in the cranial bones. One is situated opposite the opening in the vertical plate of the frontal bone, the other corresponds to the opening in the horizontal plate of the same bone; around the margins of these openings, as well as elsewhere, the external surface of the dura mater appears normal. The dura mater presents no abnormal separation from what remains of the bones forming the floor of the right anterior fossa of the skull, being as usual here quite adherent. The superior longitudinal sinus contains a loose, decolorized post-mortem clot. The other sinuses contain reddish clots and fluid blood, but no thrombi.

Upon cutting through the dura mater on a line with the sawn surface of the cranium, this membrane is found to be without abnormal adhesion,

save around openings into the brain, which correspond in situation to the openings previously described in the dura mater and the bone; around these openings, which exist one on the convexity and the other on the orbital surface of the right frontal lobe, the dura mater is firmly adherent for a distance of $\frac{1}{2}$ to $1\frac{1}{2}$ ctm. to the subjacent pia-arachnoid membrane. These adhesions are such that fluids injected into the cavity formed in the frontal lobe (as described below), or escaping from this cavity, would not make their way into the surrounding sub-dural space. For a distance of 3 or 4 ctm. around these openings the inner surface of the dura mater presents the appearances of a hemorrhagic pachymeningitis. It is here coated with a thin yellowish-brown delicate membrane, which can be stripped up with the forceps, and which in places is adherent to the pia-arachnoid membrane. A short distance in front of the opening on the convexity of the frontal lobe a small, loose red coagulum of blood rests on the pia mater. Elsewhere the inner surface of the dura mater appears normal.

For a distance of about 2 ctm. around the openings into the frontal lobe the pia mater is of a yellowish color, and contains a few small ecchymoses. Elsewhere over the convexity of the hemispheres the pia mater presents a normal appearance. The pia mater covering the base of the brain, however, is acutely inflamed. Here there is a sero-purulent, yellowish-green exudation into the meshes of the pia mater, most abundant over the medulla oblongata, pons, inter-peduncular space, and inner parts of the fissures of Sylvius. This exudation is as much on one side of the brain as on the other, and does not extend to the convexity, where there is rather less than the normal quantity of fluid in the pial meshes.

The convolutions of the left cerebral hemisphere appear somewhat flattened as if there were increased intra-cerebral pressure. The lateral ventricles on both sides contain an increased amount of fluid rendered turbid by admixture of fibrin and pus, which also infiltrate the choroid plexuses. In each ventricle the fluid amounts to about 50 cubic ctm.

The right frontal lobe is somewhat sunken in. On the convex lateral surface of this lobe is a nearly circular hole about 5 ctm. in diameter, which opens into a cavity occupying the interior of this lobe. This hole involves the second and third frontal convolutions, which are thereby destroyed to a corresponding extent. The upper margin of this opening is 3 ctm. distant from the superior longitudinal fissure, its anterior margin is $3\frac{1}{2}$ ctm. distant from the anterior margin of the frontal lobe, its posterior margin is $1\frac{1}{2}$ ctm. from the anterior central convolution; the edges of this opening are thin and of a greenish colour, with here and there a few ecchymoses.

The orbital surface of the right frontal lobe is almost wholly destroyed. The gyrus rectus with the olfactory tract and bulb arc, however, preserved. This opening into the orbital surface measures about 5 ctm. in diameter, both antero-posteriorly and transversely; the edges of this opening are likewise thin, discoloured, and beset with small hemorrhages. The distance between the lateral margin of the opening in the orbital surface and the inferior margin of that in the convexity of the frontal lobe measures 4 ctm. over the surface of the brain.

The interior of the right frontal lobe is destroyed and occupied by a cavity with soft, greenish, sloughy walls composed of the surrounding brain substance; the walls of this cavity measure from 2 to 8 or 10 mm. in thickness; the innermost part corresponds to the convexity and to the

orbital surface of the frontal lobe. This cavity extends backward so as to have undermined somewhat the anterior central convolution. The cavity communicates with the anterior part of the right lateral ventricle. The anterior part of the nucleus caudatus and the adjacent portion of the internal capsule upon this side are destroyed. The white matter of the parietal and temporo-sphenoidal lobes adjacent to the cavity is soft and white in colour. The change here resembles the so-called hydrocephalic softening observed around the ventricles in many cases of tuberculous meningitis, and usually attributed to post-mortem changes. The substance of the left cerebral hemisphere is moist.

After removal of the brain and membranes the opening in the orbital plate of the frontal bone is found to measure $3\frac{1}{2}$ ctm. in antero-posterior, and 3 ctm. in transverse diameter. This opening extends backwards so as to involve the lesser wing of the sphenoid cavity.

The left optic nerve and the posterior segment of the left eye were removed and examined. The dural sheath of the optic nerve is markedly distended by an accumulation of clear serous fluid in the sub-dural space; the optic papilla is decidedly swollen, and presents ill defined contours and a hazy appearance. The central vein and its branches are large and distinct.

The brain, after removal, was placed in Wickersheimer's fluid, where it remained for ten days. It was then transferred to alcohol, in which it acquired a firm consistence, and still preserved nearly its normal colour; after hardening, two frontal sections were made through the hemispheres, one through the anterior central, and the other just behind the posterior central convolutions. The cortex and the immediately subjacent white matter of these convolutions appeared normal. The deeper white matter, however, namely, the foot of the corona radiata, where this latter passes into the anterior part of the internal capsule, is softened upon the right side, and contains several small hemorrhages. The anterior third of the right internal capsule, and a part of the nucleus caudatus is destroyed as already described. The motor tract affected, therefore, includes the anterior part of the internal capsule and the adjacent coronal expansion of its fibres into the centrum ovale. The anterior of the left hemisphere presents no lesions. Upon the hardened brain the sinking in and shrinkage of the right frontal lobe is more marked than it was at the autopsy.

Remarks.—In reviewing the case certain questions arise. *First*, whether the foreign body ought to have been removed? In general and in the abstract this question would require a careful adjustment of many circumstances—and a large material for study. The table of cases compiled by Dr. Wharton, in the *Philadelphia Medical Times*, July 19, 1879, is valuable as a list of references, but unfortunately offers few details. To this may be added the citations under the head of brain, foreign bodies in, and brain, wounds or injuries of, contained in the *Index to the Catalogue of the Library of the Surgeon General's Office*, vol. ii. p. 351 and p. 396. See *Deutsche Chirurgie*, Billroth and Leneke, Lieferung, 30; *Kopfverletzungen*, by Bergman, p. 76 *et seq.* See also the first vol. of *Surgical History of the War of the Rebellion*, from which an analysis of recoveries after lodgment of foreign bodies in the brain, has been made by Dr. John A. Lidell, in the *American Journal of the Medical Sciences*, April,

1881, p. 335, and article on Compression of the Brain, by Dr. S. W. Gross, *Am. Journal Med. Sciences*, July, 1873, p. 40.

With this material certain discriminations must be made as to the location, fixity, duration of residence of a foreign body, and whether it is exciting any irritative symptoms. The last circumstance is of great moment. In the above case no symptoms were present, and this may be attributed to the vigorous health and quiet temperament of the subject, to the absolute immobility of the piece of iron, and to the fact that the lesion was in the frontal lobe, which we know to be more tolerant of injuries than any part of the brain. It may be argued, and with reason, that with the missile undisturbed the patient might have lived for months or years longer. This case will deserve to be quoted in favour of expectant treatment. But it will be offset by a very large number of a contrary kind—when the field of research is fully explored. I think that in this argument the several points to which I have referred will all claim careful consideration. Such a discussion presupposes that the penetration of the brain by the foreign body should be known without any explorative operation. In the case of Avery, the invasion of the brain was not only unknown, but could not have been known without performing the explorative operation. This deep wound would doubtless have occasioned intra-cranial inflammation, and I do not feel any doubt as to the necessity of removal of the foreign body under these circumstances. In corroboration of this view it may be said that the orbital plate was found to have been fractured into the sphenoidal fissure and through that opening a very direct communication was opened to the brain from the explorative wound. The above remarks apply only to cases in which a foreign body has been lodged for a considerable period of time. There would seem to be no doubt of the necessity of extracting foreign bodies which are easily accessible, when they have only recently penetrated the skull.

Second. The fact that the wound was in the orbit causes special peculiarities. In Wharton's list of cases he says that in 18 the missile passed into the brain through the orbit, and that all but one of them were fatal. Berlin, in Graefe and Saemisch, *Handbuch der Ophthalmologie*, Bd. vi. th. iv. s. 599, says that of 52 cases of fracture of the roof of the orbit by penetration of foreign bodies, 41 died, *i. e.*, 80 per cent. He adduces, *l. c.*, page 638, four cases in which foreign bodies had remained for periods varying from forty days (*Demours*, 1818) to seventeen years (*Pagenstecher*, 1864), and had been extracted; both the above died, and the two others (reported by *Percy* and *Günther*) recovered. It is probable that research would discover more cases of this kind of injury, and afford us more data for deductions. Two circumstances seem to have importance in the great mortality of these cases. First, the soft tissues of the orbit choke the aperture in the cranium and prevent easy escape of discharges; second, the recumbent posture is unfavourable for drainage through this

locality, because the injury is at the base of the brain. These two disadvantages were strongly appreciated during the treatment of Avery's case after the cerebral abscess had been opened. It was found that the posture which he constantly assumed, namely, on the left or paralyzed side, only imperfectly assisted the outflow of fluid; and, in fact, the trephine hole seemed a more ready outlet than that in the orbital roof. The great obstacle in the orbit was the continuous growth of new tissue, which encroached upon the external and on the bony openings. It would have been better if all the contents of the orbit, in addition to the eyeball, had been removed, the skin of the lids being left. A clean cavity would have made the dressing much easier. In view of the extreme danger which belongs to cases of wounds through the roof of the orbit, I think the suggestion deserves consideration whether a patient's chances might not be improved by excising all the contents of the orbit (*exenteratio orbitæ*), as soon as any tokens of cerebral or meningeal trouble appear. I know that the early symptoms are of uncertain value, and the proceeding might seem uncalled for if not dangerous. But in Avery's case it would have been better to have taken this step on the sixth day after the foreign body was removed. Better drainage would have been secured than by any of the devices which were assiduously employed for this object. Another obstacle, as it proved in Avery's case, was the cyst which had formed like a thimble around the end of the iron in the brain. This did not come away until the thirty-eighth day after removal. Inflammation began outside of it in the brain substance very early. The fluid products of inflammation were pent up outside of it, and could not sufficiently escape through the orbital hole. The only relief would have been a free incision into the dura mater and enlargement of the aperture in the roof by a small pliers or a rongeur. Another proposition intended to meet this difficulty has been made by Berlin (see Gracfe and Saemisch), and was also suggested in consultation by Dr. Weir, namely, to chisel away the edge of the orbit for a breadth and depth sufficient to give ample access to the brain. This proposal arose on the sixteenth day, when the existence of a cerebral abscess was not doubted. It would have opened a direct approach to the abscess, and given an outlet not liable to be choked by growth of new tissue. Bergman, quoting Berlin, in *Deutsche Chirurgie*, Billroth and Luecke, page 249, says that the abscess in 18 fatal cases was superficial and close to the place where the bone had been fractured. Of the 18 cases, 15 had abscess of the brain, and only two had meningitis. The near vicinity of the abscess is a point to be remembered. In Avery's case the very free opening of the orbit on the sixteenth day in addition to the trephining, afforded what seemed an abundant means of escape for pus. This was furthermore promoted by using a drainage tube passed through the two openings. But the pulpy nature of the softened brain tissue clogged the holes of the tube, and they were left in position only

three days. It is not pretended that the most perfect provision for out-flow of fluid will prevent an abscess from extending farther into the brain, and thus becoming fatal. But we certainly have to strive to remove all obstacles which tend to favour its extension. In the famous Harlow-Bigelow tamping-iron case, Dr. Harlow, in a private letter to me, says that it was due in great measure to the free outlets through the skull below and above that the man Gage owed his life.

Third. The final cause of death with my patient was inflammation along the base of the brain. It is probable that the pain on the right side of the chest, which appeared on the eighteenth day, was due to irritation of the pneumogastric. The abscess did not greatly derange his functions, except by the paralysis of the opposite side. His intellect was good, digestion and assimilation good. Certainly the quinine and stimulants had no injurious effects, but quite the contrary. On many occasions it was noted that the removal of pus would be followed speedily by reduction of temperature and by greater steadiness of the pulse. The close adhesion of the dura mater around the orbital opening and the trephine hole completely shut off the arachnoid cavity from the track of the suppuration, and no meningitis spread from these situations, neither could fluids used in syringing get beyond the parts intended to be irrigated. Trial was made of two per cent. solution of carbolic acid, but this excited so much headache that it was abandoned for a four p. e. solution of boracic acid.

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NEW YORK, 233 Madison Avenue.

ARTICLE III.

NOTES OF A CASE OF LODGMENT OF A FRAGMENT OF IRON IN THE SUBSTANCE OF THE BRAIN; DEATH IN FOUR MONTHS; AUTOPSY. By GEO. BURR, M.D., of Binghamton, N. Y.

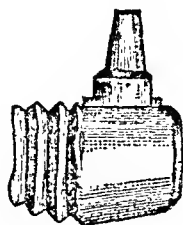
ON the 8th day of October, 1881, Leonard S. S——, a young man of about 20 years of age, residing at North Fenton, in company with another young man of about the same age, went out into the fields and woods for the purpose of shooting squirrels. They were armed with shot

guns, one of which was old, and had been made over so that caps could be used in firing it, by screwing into the side of the breech a tube communicating with the bore of the barrel. Into this tube, and standing at a right angle to it, was also screwed a smaller tube, called the nipple, on which the cap was placed. On firing this gun by S——'s companion, he standing near by, the breech of the gun burst, and both young men fell to the ground. They soon recovered, and S—— rose to his feet with a copious discharge of blood from a wound he had received, immediately above and near the centre of the zygomatic arch upon the left side. He was conveyed to his home, and a surgeon, Dr. C. W. Greene, of Chenango Forks, was called, who on examining the wound was satisfied that it was of a serious nature, and requested that I might be sent for. The next day, October 9th, I saw the case. The patient was lying in bed, perfectly conscious, complaining only of soreness in the vicinity of the injury, and some slight headache. None of the cerebral functions nor of the cranial nerves were involved or disturbed, with the exception of a slight defect in hearing in the left ear. His mind was unaffected, his recollection of the occurrence clear, his sight perfectly normal, nor was there paralysis of any of the nerves.

The statements made to us rendered it very probable that the tube or cylinder and nipple had caused the wound; but we could hardly believe that a very serious injury had been suffered, but that the missile, whatever it might be, must be outside of the cranium. Some efforts, therefore, were made to extract it by forceps, but these attempts failing, the patient was put under the influence of an anæsthetic, and the forefinger was passed into the wound. In doing this portions of brain matter escaped. On pushing the finger still further inward, a large opening was found in the cranial wall, through which the finger readily passed into the cavity of the cranium. No trace of the missile could be reached by the finger, nor found by any other means. The question of further surgical interference then presented itself, and we finally determined to make no further attempts to extract the piece of iron at that time. The patient soon began to rally, and within a week left his bed, and a few days afterwards was out of doors.

On Monday, the 23d of January, 1882, S—— called at my office, having driven a distance of at least twelve miles. He appeared well and hearty, had, however, a fistulous opening where the projectile entered, through which was discharging purulent matter. He said he was going to work again, and I afterwards learned did go to work cutting railroad ties. On the 21st of February he was taken with violent pain in the head, and in three or four hours died, having carried the mass of iron in the brain four months and thirteen days. The day before he had had a debauch, and was taken home in a wagon lying flat upon his back, stupefied from the effects of drink.

The brain was removed entire by Dr. Houghton, of Greene, and placed in alcohol reserving it for my inspection. The iron was found within the brain, and proved to be as at first supposed the tube and nipple of the gun. An accurate drawing of it of its actual size was made, and is reproduced with these notes. It was found in the anterior and inferior angle of the left middle lobe of the cerebrum in near proximity to the fissure of Sylvius. The cavity in which it was imbedded was lined by a distinct membranous cyst.



ARTICLE IV.

A CLINICAL STUDY OF THE DISEASE AND CURABILITY OF INEBRIETY. By
T. D. CROTHERS, M.D., Supt. of Walnut Lodge, Hartford, Conn.

IN 1878 there was admitted in the Asylum at Walnut Lodge, Hartford, Conn., forty-two patients suffering from inebriety and the use of opium. Of this number, thirty-five left the asylum with consent, the same year of their admission. On the asylum books they were noted as follows:—

Discharged recovered	10
Discharged greatly benefited	20
Discharged without results	4
Died	1

35

It is proposed to study the history of these cases, and the results of treatment after a period of nearly four and a half years from the time of leaving the asylum. The history of each patient was recorded at the time of admission, based on his statements and those of his friends and relatives. The constant tendency to exaggerate and cover up the real facts by the patients, and sometimes their friends, required great care and frequent reconsideration of the clinical history, to exclude all sources of error. In many instances the facts were only obtained from long correspondence, close observation, and acquaintance with the patient. Each case was studied from a physical point, and all the mental phases recorded and analyzed as far as possible.

The first question was the evidence of an inebriate diathesis, or a special inherited predisposition to use spirits coming from the parents direct.

The number exhibiting this diathesis was eight, as follows: In two instances the father drank spirits to excess for years before and after the birth of the patient. In one case the father was intoxicated at the time of conception. In two cases the mother used wine and spirits before and

during pregnancy, and in two cases both parents used spirits to excess at times. In one case the history was obscure, but the indications were that both parents used spirits at different times, being free livers, and frequenting drinking society. In three cases the particular inheritance seemed beyond all doubt. In the next twelve cases the heredity was more removed, and less distinct, but still a prominent factor. In three cases the grandfather on the mother's side drank to excess; in four cases the grandparents were drinking people; in one case both grandparents, as far as the history could be obtained, were inebriates, and died from excess. In four cases insanity, inebriety, and consumption had been prominent in the grandparents. In eleven cases a defective brain and nerve inheritance was prominent, as follows: In seven instances, different states of monomania, paralysis, hysteria, and forms of persistent neuralgias, were present in one or both parents. In three instances insanity was present in the parents, with epilepsy in the father in one case. Thus in thirty-one out of the thirty-five cases there were positive inherited nerve and brain defects, which formed the active soil for the propagation and growth of inebriety. In the first eight cases, the probability of inebriety appearing in the next generation was almost a certainty, in view of the clinical history of the parents, and a knowledge of heredity. In the twenty-three cases which followed, the predisposition to disease was very marked, the form in which it appeared depending on some unknown factor. In the remaining cases, four in number, no history that was reliable could be ascertained of defective inheritance.

The second question was the general exciting or predisposing causes, apparent in these thirty-one cases.

In the eight cases where the inebriate inheritance was direct from the parents, inebriety began in three cases at puberty, following the evolution of the sexual function. In one case a positive pleasure in the taste and effect of spirits began at the age of seven years. Two cases appeared in which inebriety followed great grief and disappointment, in another instance domestic trouble was the exciting cause. The last case, the inebriety began from the excitement of success in being elected to an office of much honour. A brief outline of each of the twenty-three remaining cases will more clearly bring out the chain of causes, and make them better understood.

CASE 1.—A merchant; grandfather on mother's side an inebriate; had dyspepsia from bad living and over-work; began to drink after using alcohol as a medicine.

CASE 2.—A carpenter; grandfather and two uncles on mother's side died from excessive use of spirits; was temperate up to the time of entering the army; then began to drink to excess.

CASE 3 was a farmer; whose grandfather on the mother's side drank at intervals to great excess; he drank first after a period of severe exposure and hardship in the Maine woods.

CASES 4 AND 5.—Both merchants; the grandfather on the mother's side drank in one case, in the other the grandmother on the mother's side used opium and spirits. In both cases inebriety came on from business troubles and mental strain.

CASE 6 was a workman, whose grandparents on both sides were drinking people. He first used spirits after being employed in a distillery. From his own statement it was curiosity at first, then after he became intoxicated the first time he continued to use spirits.

CASE 7.—A liveryman; both grandparents drank; he suffered from what was called fits, in childhood, and used spirits at puberty after sexual excess.

CASE 8.—A builder and carpenter; inebriety in several uncles and aunts, moderate drinking in the grandparents; when ten he drank to intoxication, and had always a passionate love for the taste of spirits.

CASES 9 AND 10 were clerks and bookkeepers, with a strong insane tendency, which had appeared in nearly every branch of the family for generations back. The exciting cause was mental strain, overwork, and general neglect of healthy living.

CASE 11 was an editor; consumption and cancer had appeared in every branch of the family extending back to the great-grandparents. After a severe attack of pneumonia inebriety appeared; two years after the use of opium began, and alternated with alcohol for many years.

CASE 12 was a physician, with a marked history of insanity on the mother's side. Suffered from dyspepsia and extreme hypochondria, followed by inebriety, with acute mania after protracted drinking.

CASE 13 was very wealthy with no business; hysteria and epilepsy very prominent in all the generations back. Began to use spirits after an extended trip to Europe.

CASES 14, 15, and 16 were traders and merchants, whose ancestors were eccentric, strange people; with a history of dyspepsia, hypochondria, and hysteria. In the first case inebriety began after the death of his wife, in the other cases exposure in the army was the active cause.

CASE 17 was a lawyer; his father, grandfather, and two uncles had paralysis agitans when about forty years of age. After a severe business reverse he began to use alcohol to intoxication.

CASE 18 was a farmer, whose mother was a weak, passionate woman, always complaining, and using drugs for every trouble. He drank after an attack of typhoid fever.

CASE 19 was a saloon keeper; both parents low, selfish people. He drank soon after marriage, and lived a low, irregular life.

CASES 20 AND 21 were persons without business; with insanity in the family, in grandparents and uncles; one dated all his drinking from the time of a shipwreck on a yacht and the rescue by a light-house keeper; the other drank soon after he began to gamble and spend his nights at Faro.

CASE 22 was a clergyman; his father was a great gourmand and beer drinker. After a season of overwork and great excitement from a revival meeting he began to use spirits to excess.

CASE 23.—Of no business; father an epileptic; he began to drink after some trifling business trouble.

It is apparent from this outline of cases, that heredity was a prominent factor, traceable in nearly all the cases, and that the exciting and predis-

posing causes, were also exploding and developing influences, which determined the disease of inebriety. These exciting and predisposing causes can be traced in nearly all cases, and where it is not apparent, our knowledge and means of ascertaining it are at fault.

The third inquiry is, when inebriety begins does it follow some regular order that can be traced and anticipated in the study and treatment?

In a large proportion of cases this can be demonstrated beyond all question. In others much obscurity prevails, and a connected chain of symptoms cannot be made out from our present limited knowledge of the subject. The following cases represent the two extremes of symptomology and progress:—

In Case 13 hysteria and epilepsy prevailed in both branches of the family, and a marked entailment of nerve weakness and exhaustion existed. He grew up well and hearty until after leaving college, when he complained of exhaustion, and was very sensitive and easily excited. After marriage he visited Europe, and drank for the first time to intoxication. From this time he could not stop drinking, and during the next two years ideas of persecution appeared, and he became boastful and extravagant in his manner. Never would acknowledge that he drank to excess. Attempted to do business and failed. Became more and more excitable in his talk and actions. Tried to reform, and was sober two months after the death of his wife, then began to use spirits again. He was untruthful, and resorted to the most childish efforts to conceal his condition. He grew worse through every effort to recover, mind and body failing alike, until he was brought to the asylum. The order of the symptoms in the case ran as follows: Excitement of travel; wine drinking to intoxication. From this time the constant use of spirits, both wine and stronger alcohols, followed. The desire increased with each indulgence, and his mind grew more and more insensible to his real condition. Delusions of strength to control himself, and persecution from his family. Egotistical extravagance of action and work. Fitful unavailing efforts to recover, and loss of pride and faith in himself and others. General failure of mind and body, could not sleep unless he used large quantities of spirits. Increased use of spirits and increased debility of body and functional activity. The brain action in all these cases follows the fitful spasm-like movement of the heart. At times displaying force and energy, then relapsing into abject weakness. The mental failure and unsteadiness were more prominent than the changes in the body.

In Case 2 another type of symptoms and progress are seen. The inheritance from the grandfather on his mother's side, who died from excess in the use of spirits, was prominent. He was temperate and healthy up to eighteen, when he entered the army. Was confined to a southern prison for six months, and began to drink spirits soon after. He continued in the army until the war was over, and for the two years following

drank to excess constantly. Then he signed the pledge, and was very temperate for four and a half years, when, from the sudden death of his child, he relapsed, and for two years drank severely. Then he reformed and lectured on temperance for over a year, and relapsed in this work. Then recovered and relapsed again, coming to the asylum. A table of the progress of this case may be stated as follows:—

Began to use spirits from debility and exhaustion in the army, and was a continuous inebriate. He stopped by mere will-power, and four years later began again, and this time as a periodical inebriate. Then another sudden halt and relapse again, in the mean time engaging as a temperance lecturer; stopping in a manner equally strange. But each time he relapsed from some distinct cause; his mind exhibiting all the marks of degeneration seen in the former case. The mystery of the long halts, of uncertain duration, was certainly governed by conditions of physical and psychical laws, now unknown. These two cases are typical of a large class that often are not understood, and seem enigmas to their friends.

I have selected four cases, not mentioned in the above, for the purpose of showing a class of traumatic causes which have a marked influence over the progress and symptomatology. They are physical and psychical in their nature, and may be more clearly seen in an outline history of each case. Case 1. A lawyer, 38 years of age; no history of heredity could be obtained. Was in good health and temperate when he suffered from sunstroke. He was prostrated for many weeks with pain and exhaustion, and recovered a year after. After an exciting appeal to a jury in an important trial, he went out and drank to stupor. From this time the desire for alcohol appeared with great intensity after every period of exhaustion. His mind would foreshadow these attacks in the extreme egotism and boastful manners foreign to him at other times. Again he would manifest untruthfulness without motive. These and other mental phases were seen before and after a paroxysm of drinking, and at first disappeared during the free interval, then continued from one attack to another. Case 2, a clergyman, 48 years old, with probably an inebriate diathesis present. The death of his only daughter by an accident caused him, in despair, to drink to stupor. From this time, for fourteen years his life was a perpetual struggle to control an intense craving for alcohol, and failure to do so. His mind showed a great change; he became an infidel and spiritualist; his habits, character, and actions deteriorated steadily; the mind and body were in constant antagonism to procure spirits and escape from the bondage of this impulse. The mental symptoms clearly showed which was uppermost. In the asylum a study of this phase determined the question of the form of treatment at all times. Case 3 was a strong, vigorous farmer of 31 years of age. He suffered from a severe lacerated wound on both legs, from a runaway, followed by great mental excitement. He remained in bed for three months after; then he began

to drink to excess at once. His habits and entire character changed, and he became an unscrupulous speculator, and when not using spirits to excess, planned and executed great swindling operations. He would drink to stupor for a day or more, then recover, and use spirits moderately for a long time. Case 4 was a travelling man for a mercantile house, 39 years old. One evening a train he was riding on, jumped the track and dashed over the rails, breaking the windows, and causing intense consternation and alarm. The excitement was so great that he was functionally paralyzed, and had to be carried from the car. Two days elapsed before he was able to continue his journey. He used spirits to excess from this time, and went gradually down from bad to worse. Unlike many other similar cases, he had no delusions of strength, but seemed to have a decreasing faith and confidence in his power to recover. These cases were clearly traceable to traumatism. The second and last was from psychological changes in the brain centres. In all, changes of structure and function followed, of which inebriety was only a sign. It may be remarked that a large number of cases of inebriety may be traced to these traumatic causes, which are now overlooked in the prominence of the later symptoms. This is a field at present almost unknown.

In a grouping of the form of inebriety, and the prominent symptoms noted on admission, the following may give some conception of the difficulties in the study of the cases and their treatment. In the first division, the periodical inebriates who used spirits to excess only at certain stated periods, with a free interval of from two days to a year or more, were twelve. In some of these cases the history of this periodicity was of exceeding interest. In two cases the interval could be calculated within an hour, and the impulse for spirits burst out, irrespective of situation and surroundings, at the exact time predicted. In the second class were grouped all those who drank steadily, with no free interval of sobriety. These were called constant inebriates, and numbered sixteen; tremors, delusions, and insomnia were present in all these cases. In the third class, called paroxysmal inebriates, of which there were six, the condition resembled an attack of acute mania, in the suddenness of its onset and short duration, depending upon some special state of the nerve centres, which, after a few hours' excess in the use of spirits, recovered their control of the organism. Case 22 was of this type. He would drink to great excess for one or two days, then stop as suddenly as he began, and the interval of sobriety would be equally uncertain. In Case 19, a bar-keeper would reform, and remain sober a long time in his business, then relapse and reform again, without any special cause or reason. One case was closely allied with opium taking, so that neither was prominent, first one then the other.

The fourth inquiry is, What is the nature and character of the treatment in these cases?

Every case is suffering from congestions, degenerations, and nutrient

perversions of every description. In the treatment the removal of all exciting causes, and building up the general strength and vigour of the organism, is the first principle. An inebriate asylum is simply a quarantine, where this object can be most easily secured. Immunity from alcohol that is almost absolute, or as near as it can be, is one of the great essentials. To accomplish this, both modified and absolute restraint over all the surroundings and habits of the patient must be exercised, depending on the special wants and needs of each one. Restraint from alcohol is only one factor, and often an insignificant one; restraint from excitement, sexual excess, overwork, and many other influences equally powerful in the causation of inebriety, are absolutely necessary. In many cases the quiet, regular living and exact surroundings are a more effectual restraint from the use of alcohol than locks and bars. Hence all restraint must be adapted to the requirements of each case, and not depend on any one thing. In a periodical inebriate and dipsomaniac, restraint at times is positively injurious, at others it is a tonic of great value. The building up process must include all the means known to science for invigorating the organism, of which electricity, baths, tonics, mineral waters, and nutrients are most prominent. With this are included exercise that is pleasant and with full consent of the patient, mental diversion and change, as well as occupation of both mind and body. The inebriate is a thoroughly sick man, needing rest and perfect freedom from all sources of exhaustion, excitement, and debility. The mind requires more skill in the treatment than in cases of the insane, and the organic degenerations are more complex, taxing every resource of science to its utmost to combat. These means must be used for long periods, of not less than from one to three years, before any permanent restoration can be expected.

The fifth and last inquiry is, What were the results from the treatment of the cases mentioned in this article?

A period of four and a half years has elapsed since these cases were under treatment, and their present condition will approximately indicate the value and permanency of the results. Letters have been addressed to both the patients and their friends, and in some instances to the family physician, and the answers may be taken as more or less reliable. In seven cases the facts came under my personal observation, and are correct. Of the first ten cases noted on the books as discharged recovered, the following table represents their condition now and during the interval from the time of treatment. The word recovery was used on the asylum books as expressing a general restoration of the physical health and return of the mind to its normal condition, manifest in healthy thought and living, with an earnest desire and exertion to get well.

Cases who are yet temperate and well	4
Relapsed once, recovered, and now well	1
Relapsed twice after a long interval, now well	2
Relapsed and now drinking	1
Relapsed and died within a year	1
Relapsed and developed general paralysis	1

Of the twenty cases noted as discharged greatly benefited, four have disappeared, and no history or trace of them can be ascertained. It is probable that most of these cases have recovered or died; in either case all history would be lost. Had they relapsed they could be more easily traced. The rule is, that cases permanently cured disappear from observation, and never refer to their past life, while the chronic incurable stands about street-corners and saloons, advertising his failure to recover and the asylum to perform a miracle in his case.

Cases that are yet temperate and well	3
Cases that were temperate up to death	2
Cases which relapsed once, and are now temperate and well	4
Cases which have relapsed more than once at long intervals, now well	3
Cases relapsed and still drinking	3
Relapsed and died from the excess	1

Of those discharged as not benefited by the asylum treatment, the following is the present state:—

Relapsed and still drinking	2
Relapsed and now in an insane asylum	1
Relapsing at long intervals	1

During treatment one died from obscure affection of the brain soon after admission into the asylum.

The following table is a summary of all the cases:—

Those still well and temperate	7
Continued temperate and well up to death	2
Relapsed once, but now temperate	5
Relapsed twice or more at long intervals, now well	5
Relapsed and still drinking	6
Relapsed and died from excess	2
Relapsed and in an insane asylum	1
Relapsed and developed general paralysis	1
Relapsed at fixed intervals	1
Died under treatment	1
No history ascertained of	4

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The cases were under treatment from thirty-four days to six months, with an average of about four months to each one. In this time it is almost impossible to expect anything more than a beginning of permanent treatment. These results, in view of a knowledge of the difficulties of treatment, are very encouraging. Some of these obstacles may be mentioned as follows: All these cases had developed a low grade of chronicity, and exhausted every means of treatment before they came to the asylum, which is only a last resort. They come to these places credulous, and expecting results more or less miraculous, or skeptical of any good or power the treatment can give them. Hence it takes a long time to enlist the intelligent coöperation of the patient with the physician and the means applied. The treatment of inebriety had scarcely begun, and both the means and appli-

ances are sadly wanting in every institution. The full support by the public both legally and morally, with trained men to study and apply the means for treatment, are also wanting. Until such a time, when institutions are founded and conducted by experts, with every resource at command, similar to insane asylums, the difficulties of this work will be very formidable. The results of treatment to-day, with the worst cases, and the crudest means and methods of restoration only faintly indicate the possibility of cure in the future. The restoration of seven in thirty-one cases, after a period of four years and more, is an unmistakable sign of the eminent curability of inebriety, with better means, and larger knowledge.

In a general review of the facts gleaned from a study of these cases, and the results of treatment as seen at this time, I have great confidence in believing that the following propositions are correct, and will be confirmed in all future studies:—

1. Inebriety is a disease, which may be studied, traced, and understood, and whose course or march follows a progressive line, full of hints pointing out the means of cure and prevention.

2. Inebriety is curable as other diseases are, by the application of physical remedies in proper surroundings, by competent men, who seek to apply exact means to meet every case.

3. Inebriety must be studied from a physical point of view, as the result of physiological and psychical laws, and not a matter of chance, or a low vicious element in human nature.

4. Standing on the frontier lines, vast outlines of hills and valleys stretch out before us, all under the domain of law. When the traditional superstition, which hangs over this field, vanishes, and the causes of inebriety are known, as well as the means for prevention and cure, a new era of humanity and civilization will begin.

5. The increasing prevalence of inebriety in this country demands a scientific study of the subject, and a more thorough acquaintance with the laws and forces which govern its rise and progress; from this a knowledge of the best means of treatment will be ascertained and applied.

ARTICLE V.

INDUCED SEPTICÆMIA IN THE RABBIT. By GEO. M. STERNBERG, M.D.,
Surgeon U. S. A.

THE object of the present paper is to compare the results obtained in some recently reported experiments upon rabbits (Report to the Scientific Grants Committee of the British Medical Association, by Peter Murray Braidwood, M.D., F.R.M.S., and Francis Vacher, F.R.C.S.Ed., *British*

Med. Journal, Nos. 1100 and 1101, 1882), with the writer's experiments made last year under the auspices of the National Board of Health. (A fatal form of septicæmia in the rabbit produced by the subcutaneous injection of human saliva. *National Board of Health Bulletin*, April 30, 1881.)

These two series of experiments considered together give confirmation to the view, already entertained by high authorities upon clinical and experimental evidence, that there are two forms of septicæmia; the one a septic toxæmia due to the effects of a chemical poison or poisons evolved during the putrefactive decomposition of certain organic substances—especially of nitrogenous animal products—the other an infectious disease produced by the rapid multiplication in the body of the infected animal of a parasitic organism.

Of the latter form there may be as many varieties as there are species—or physiological varieties (Pasteur)—of bacteria which find in the fluids or tissues of living animals conditions suitable for development. The best studied and most widely known form of septicæmia due to the presence of a parasitic organism is the disease known as anthrax—*charbon* of the French, *miltzbrand* of the Germans—but several other varieties are now well established, in which similar symptoms and pathological results are produced by organisms morphologically different from the *Bacillus anthracis*. Among these may be mentioned the form of septicæmia in the mouse, so well studied by Koch, which is due to a minute bacillus, and the form of septicæmia in the rabbit produced by the subcutaneous injection of human saliva, due to a micrococcus, which has been studied by Pasteur, Vulpian, and by myself (independently). It may be that in both forms of septicæmia, viz., in septic toxæmia from the absorption of certain of the products of putrefaction, and in the infectious septicæmia due to the presence of a parasitic organism, the immediate and essential cause of the disease processes and results is the same, and that the organisms are simply the remote cause as producers of the poison, this being effected in the one case external to the body by an organism which does not find conditions favourable to its development in the interior of the animal, and in the other by one which is able to thrive within and at the expense of the fluids or soft structures of the living body. There is good reason to believe that organisms of the first class which habitually feed upon dead organic material, and require the presence of free oxygen may become habituated to changed conditions and acquire the power of invading living tissues, especially when these are enfeebled as the result of septic toxæmia, profuse loss of blood, wasting discharges, etc. But this is a branch of the subject upon which I shall not enter at present.

Whatever may be the *modus operandi* of the septic poison, or of septic organisms capable of reproduction within the bodies of living animals, there can be no doubt that all varieties of septicæmia are due directly or

remotely to the action of bacteria, for it is now well proven that putrefactive processes depend upon the presence, and vital activity of these minute vegetables.

The present state of science justifies us in formulating the axiom *no bacteria, no putrefaction*, and as animal and vegetable tissues subject to putrefaction exert no injurious effect—except in the case of poisonous chemical products evolved in the growth of certain plants—but, on the other hand, are essential for the sustenance of living animals, it is evident that in the end bacteria are responsible for all septic disease processes.

Observation and experiment indicate that septic toxæmia may be acute or chronic, according as it is produced by a single large dose or by frequently repeated small doses of the poison or poisons evolved during the putrefactive fermentation of organic substances; that death may result in a comparatively brief time from a lethal dose of the toxic agent; or, that it may occur at a later date as the result of secondary changes in the blood and in vital organs; and that the poisoning may occur through various channels, *e. g.*, (*a*) through the lungs by continued respiration of an atmosphere contaminated with emanations from putrefying material—filth; (*b*) through the mucous membrane of the alimentary canal when putrid matter is taken with food or drink, and probably also from the putrefaction *in situ* of imperfectly digested or unduly retained material in the *primæ viæ*; and (*c*) from the surface of suppurating wounds, from putrid purulent collections in any part of the body, and from decomposing secretions or discharges from any surface or cavity.

The experiments recorded by Braidwood and Vaehner, *l. c.*, were mainly made with lochial fluid undergoing putrefaction, and their results indicate that they produced in the animals experimented upon septic toxæmia of greater or less severity.

The following *résumé* of results is given by the authors themselves.

Résumé.—SERIES A: Infected thirteen rabbits with a solution of lochia itself, or mixed with antiseptics.

Infected four rabbits and one dog with purulent fluid diluted.

Infected four rabbits with an aqueous solution of macerated muscle.

Infected two rabbits and one dog with grumous fluid from the peritoneal cavity.

Of these in seven instances (rabbits), and in two (dogs) recovery took place.

In eleven experiments, the animal (rabbit) was inoculated by injection through the vaginal wall.

In ten experiments the animals (eight rabbits and two dogs) were inoculated subcutaneously.

In three experiments the animals were inoculated by injection through the abdominal peritoneal cavity.

In four experiments the animal (rabbit) received the septic fluid applied to an open wound.

In one experiment the animal (rabbit) was inoculated by injection into a vein.

SERIES B: Infected fourteen rabbits and one dog with lochial solution by itself, or mixed with antiseptics.

Infected seven rabbits with purulent fluid diluted, or mixed with antiseptics.

Of these in nine instances (rabbits), and in one (dog), recovery took place.

In ten experiments the animals (rabbits) were inoculated by injection through the vaginal wall.

In six experiments the animals (rabbits) were inoculated by injection *per perinæum*.

In four experiments the animals (rabbits) were inoculated subcutaneously.

In one experiment the animal (dog) was inoculated by injection *supra pubem* into the abdominal peritoneal cavity.

SERIES C: Injected five rabbits with freshly removed peritoneal purulent fluid from a patient.

Injected two rabbits with freshly removed sanguineous peritoneal fluid from a patient.

Of these in the two last instances (rabbits) recovery took place.

In three experiments the animals (rabbits) were inoculated by injection through the vaginal wall.

In one experiment the animal (rabbit) was inoculated by injection *per perinæum*.

In three experiments the animals (rabbits) were inoculated subcutaneously.

The conclusions drawn by the authors from their experiments are summarized as follows:—

“We may then infer from our three series, consisting of fifty-four experiments: (1) that the fact of the septic fluid having been derived from a serous cavity, as the peritoneal, is not the cause of the septicity; (2) that the purulent condition (*de novo* or by admixture) intensifies its septic power; (3) but that pus alone is not necessarily septic to animals, as has been previously repeatedly proven by various experiments; (4) that purulent fluid from a serous cavity (especially that from the abdominal peritoneal cavity) is more lethal than that derived from connective tissue; (5) that putrefaction or decomposition decidedly intensifies the septic or lethal action of a septic fluid; and that (6) the septic influence of human lochia on rabbits is due to some special property in it (*sui generis*), and is not connected with the presence in it of micrococci organisms.”

If we contrast with these results those obtained by myself from the subcutaneous injection, in the rabbit, of human saliva, we shall find very striking differences, which may be summarized as follows: (1) greater mortality; (2) lethal dose much smaller; (3) date of death and pathological appearances quite uniform; (4) putrefaction of saliva destroys its virulence; (5) virulence is connected with the presence of micrococci; (6) serum from subcutaneous connective tissue and blood from an animal recently dead swarms with micrococci, and is virulent in the smallest quantities; (7) antiseptics promptly destroy virulence of saliva and of fluids from the body of infected animals.

I shall now proceed to discuss in detail, but as briefly as is consistent with the object in view, each of the above-enumerated points of contrast.

(1) *Greater Mortality.* The tabular statement of experiments made by Braidwood and Vacher shows that rabbits were inoculated with septic fluids, through various channels, 51 times, with a fatal result in 33 instances. In ten experiments antiseptic substances were mixed with the septic fluid used, with a fatal result in eight instances. In several cases the fatal result seems to have been due to an accidental complication. Thus, the notes of the experimenters show that in experiment No. IV., in which death occurred thirty hours after injecting one drachm of lochial fluid, *per vaginam*, into the pelvic cavity of a rabbit, the necropsy showed “a large clot in the right iliac region external to the museles.” In experiment V., in which the injection was made into the abdominal perito-

neal cavity, death occurred in eighteen hours, and the post-mortem examination showed that the intestine had been punctured by the hypodermic needle. In experiment VIII., it is recorded that the animal received accidentally a bruise over the right hip, which gradually induced a subcutaneous abscess. In experiment XXV. the remark is made: "Death probably resulted from an accident, as shown by the necropsy." Excluding these experiments we have left 37 with a mortality of 21. How far this mortality was dependent upon the fluid injected *as a septic fluid*, and how far it was due to injury inflicted by the hypodermic needle at the time of the operation, or to the mere presence of the fluid introduced into the pelvic or peritoneal cavities, it is impossible to determine, but it is evident that there is a greater liability to accidental complications in this method than in the method by subcutaneous injection into the connective tissue, employed by myself. The contrast as to mortality, however, is very striking. I say in my original report:—

"I have demonstrated by repeated experiments that my saliva in doses of 1.25 c. c. to 1.75 c. c., injected into the subcutaneous connective tissue of a rabbit, *infallibly produces death*, usually within forty-eight hours."

The number of experiments upon which this announcement rests I am not able to give at the present moment, as my detailed report of these experiments is in the hands of the National Board of Health, and I have not a retained copy at hand.¹ I think, however, that I am quite safe in saying that I have repeated the experiment at least twenty-five times with my own saliva. But experiments made subsequently to the writing of the above quotation from my original report, make it necessary for me to slightly qualify the language of this. I can no longer say *infallibly* produces death, as in several instances death has not occurred in rabbits which had been previously injected with saliva mixed with certain substances—alcohol, quinine—which, when added to it in a certain proportion, prevent the usual fatal result, but do not prevent an impression being made by the mixed injection, which seems subsequently to protect the animal from the lethal effects of injections of saliva alone.

I have not yet performed a sufficient number of experiments to enable me to speak with confidence as regards the protective influence of these mixed injections, but hope to pursue the investigation at some future time.

(2) In the experiments of Braidwood and Vacher the amount of septic fluid injected was from half a drachm to a drachm and a half. There is good reason to believe that this amount of pus, or of "grumous lochial fluid" introduced into the pelvic or peritoneal cavity of a rabbit might give rise to secondary deposits in the liver, etc., and produce death from causes quite independent of the septicity of the fluid injected. This view

¹ This detailed report, I am informed, will be published in full in the Annual Report of the National Board of Health for the year 1881.

is sustained by the remote period at which death occurred in a number of cases, and by the post-mortem notes, which show that secondary deposits in the liver, etc., were of common occurrence in these cases.

In my experiments the maximum amount of saliva injected was less than the minimum quantity of septic fluid used by Braidwood and Vaecher, and there is good reason to believe that still smaller quantities would have been quite as effective, as *the smallest dose produced death quite as promptly as the largest*. In one experiment with small rabbits three out of five succumbed to an injection of one minim of saliva diluted with five minims of distilled water (each).

I beg those who undertake to repeat my experiments to observe that my saliva in the quantities mentioned produced the results recorded. The question as to whether the saliva of other individuals injected in the same manner would produce similar results is answered as follows:—

“The saliva of four students, residents of Baltimore, gave negative results; eleven rabbits injected with the saliva of six individuals in Philadelphia gave eight deaths and three negative results; but in the fatal cases a less degree of virulence was shown in six cases by a more prolonged period between the date of injection and the date of death.”

Vulpian has since reported to the French Academy results corresponding with my own, so that it is evident that I do not alone enjoy the distinction of cultivating in the secretions of my mouth a micrococcus fatal to rabbits when introduced beneath their skin.

(3) In the experiments of Braidwood and Vaecher death occurred at a later date than seven days in no less than 13 out of 21 fatal cases under consideration, and the pathological appearances noted are not at all uniform in character. In my experiments the rabbits were so commonly found dead or dying on the second morning after inoculation that I have come to look upon thirty-six to forty-eight hours as the duration of the fatal infectious disease produced thereby. The constant and characteristic pathological lesion found by me was a diffuse cellulitis, or inflammatory œdema, extending in all directions from the point of injection, attended with an abundant exudation of bloody serum swarming with micrococci.

Hemorrhagic extravasations in the subcutaneous connective tissue and in various organs were of frequent occurrence, and changes in the liver and spleen, such as are common to quickly fatal septic diseases, were commonly found. The spleen was usually greatly enlarged, and sometimes contained black pigment; the liver was frequently dark in colour, and gorged with blood, but more often of a leather colour, and containing much fat, resembling, in these particulars, the liver of yellow fever.

(4) Braidwood and Vaecher find “that putrefaction or decomposition decidedly intensifies the septic or lethal action of a septic fluid.” In my experiments putrefaction was found to destroy the virulence of the saliva. When this fluid was kept in a *culture* oven for twenty-four hours, at a

temperature of 37° cent., it developed an odour of putrefaction, and *no longer* produced any noticeable results when injected beneath the skin of a rabbit.¹

(5) In my experiments, micrococci in great abundance were constantly found in the bloody serum from the œdematous connective tissue, and usually in the blood of rabbits just dead. By filtration and culture experiments proof was furnished that the virulence of these fluids depended upon the presence of the micrococci. Braidwood and Vaecher find that "the septic influence of human lochia on rabbits is due to some special property in it (*sui generis*), and is not connected with the presence in it of micrococcus organisms." The latter clause of this proposition may be accepted upon the evidence furnished by the experimenters. But it may be questioned whether the septic influence of human lochia "is due to some special property in it *sui generis*." In the tabular statement of their experiments the authors make such remarks as the following, in referring to the lochial fluid injected into rabbits: "Had a slightly fetid odour;" "fluid very fetid, sanious and grumous;" "filled the sloughing wound with two pellets of cotton-wool which had been soaked, 70 hours previously, in fetid lochia from Mrs. G.," etc.

(6) Although the experimenters failed in certain cases to note the presence of the bacteria of putrefaction in the lochial fluid injected into their rabbits, as, for example, in the instance in which this is described as "very fetid, sanious, and grumous," there can be very little doubt that putrefactive changes had taken place, and there seems to be no good reason for assuming the presence of some "special property" differing from that found in other putrefying material of animal origin. According to my observations, the vaginal mucus of healthy females contains an abundance of bacterial organisms, and it is quite probable that, under the favouring influence of an elevated temperature, the lochia is usually more or less advanced in putrefaction before it reaches the vaginal orifice, especially when the flow is scanty, and a well-closed os tends to the retention of the fluid within the uterus. The lochial fluid as it escapes from the uterine vessels is probably bland and harmless, not differing materially from blood-serum, and holding in suspension a certain number of the corpuscular elements of the blood. In the serum present in the œdematous connective tissue of a rabbit killed by the injection of saliva, we have a fluid similar in its origin—from the blood—and in its physical characters so far as the naked eye can discern. But the microscope reveals in it the presence of innumerable micrococci, and experiment shows that a minute quantity introduced beneath the skin of a healthy rabbit will produce speedy death. I have in a number of instances, and as often as the experiment was tried,

¹ My saliva is odourless, and has the normal reaction. I am not aware that it presents any peculiarity unless it be that it is secreted in unusual abundance. My teeth are sound, and I do not use tobacco.

produced fatal septicæmia in a rabbit by introducing beneath its skin a hypodermic needle dipped in the blood of a rabbit just dead as the result of an injection of saliva.

(7) Finally, in the experiments of Braidwood and Vachet, in which antiseptics were mixed with the septic fluids injected into rabbits, the mortality was increased by this admixture, showing that these so-called antiseptics—carbolic acid, sulphurous acid, potassium permanganate—did not neutralize the poisonous septic element in the fluids used.

On the other hand, a series of experiments made by myself to test the comparative value of disinfectants¹ has demonstrated conclusively the power of these and many other substances generally recognized as antiseptics, to destroy the virulence of blood and serum from a septicæmic rabbit killed by an injection of human saliva. The proportion required differed with different substances and was considerably greater for carbolic acid and potassium permanganate than for iodine, ferric sulphate, and the mineral acids, being less than 0.5 per cent. for the latter, while 1.25 per cent. of carbolic acid, and 2 per cent. of potassium permanganate was required to disinfect the virulent fluid used in my experiments. The proportion of these disinfectants used by Braidwood and Vachet was considerably in excess of this (5 per cent. of carbolic acid and a saturated solution of potassium permanganate), indeed, the quantity injected was so great that it is difficult to decide whether the septic fluid or the antiseptic agent mixed with it was responsible for the death of the animals experimented upon.

In my experiments with disinfectants the result was very striking. In 46 instances the subcutaneous injection of virulent blood and serum from septicæmic rabbits, mingled with various antiseptic substances, gave negative results, whereas the virulence of the same fluids was demonstrated by comparative experiments in which a much smaller quantity was used, and by 35 experiments in which inefficient quantities of efficient antiseptic agents or solutions of substances which proved to be inert, were mingled with the virus. Thus carbolic acid failed at 0.5 per cent., but was efficient at 1.25 per cent.; potassium permanganate failed at 1 per cent., but was efficient at 2 per cent.; potassium nitrate and sodium chloride failed at 4 per cent., etc. etc.

¹ Board of Health Bulletin, July 23, 1881.

ARTICLE VI.

RUPTURE OF THE LEFT FALLOPIAN TUBE AND COPIOUS HEMORRHAGE INTO THE PERITONEAL CAVITY. By J. F. HARTIGAN, M.D., of Washington, D. C.

CASE I.—Mrs. S. T., coloured, æt. 33, mother of five children, youngest sixteen months old, menses irregular since its birth; was seized on the morning of September 12, 1881, with a sudden sharp pain low down in the abdomen; menstruation was a month overdue, and she remarked that this was perhaps its beginning; such belief was heightened the next day by a normal show which lasted up to death; there were no symptoms of pregnancy. She was well up to this time except that, her husband says, a few nights before in bed she felt cold and chilly, although the room was very warm, and requested him to put the window down; also, when he was leaving the house to go to work the morning of her attack, she expressed a desire to lay aside her laundry labours and take two weeks' rest.

When the pain seized her she had a cup of coffee in her hands getting breakfast; it continued growing worse, and felt, as she said, like labour pain. She, however, kept going about, complaining all the time, and would occasionally sit and lie down and go to work again; her strange conduct and actions in the mean time excited anxiety, and two days before her death great pallor was noticed, and she talked in a rambling way, indeed, as her sister said, she felt and looked as if she would die.

This state of things continued until the morning of the 17th, when she caught herself and exclaimed, "Oh, Lord! my stomach, that pain that I have been complaining of for a week is almost cutting me in two." She lay on the floor on her abdomen, steadily grew worse, and was then carried to a lounge. Dr. Winter was summoned, who soon afterwards found her unconscious in collapse, death ensuing about 5 P. M.

At the *autopsy* the next day the quantity of blood in the abdominal cavity was amazing; becoming satisfied that no large vessel was ruptured, some difficulty was experienced in learning the source of the hemorrhage. After sponging out the abdomen this was discovered by a clot protruding through what appeared upon examination, as the specimen shows, a rupture of the left Fallopian tube on its superior aspect, irregular in shape, one-fourth inch long, and an inch from the uterus; there was partial dilatation and attenuation of the walls of the tube in its middle; the finest probe would not penetrate the ostium internum; the ostium abdominale was open. The uterus was enlarged, five inches long, and empty, its rugæ, however, and lower garments of the woman, were found slightly tinged with the menstrual flow before referred to. There was also a true corpus luteum, of a dusky hue, included, perhaps, in one-sixth of the left ovary. Other organs normal.

The interest attached to the specimen led me to examine into its literature through the unsurpassed facilities of the index catalogue of the Army Medical Library; I am also indebted to Dr. Lamb and Mr. Z'glinitzki for translations.

CASE II.—The first reference to this subject, although not exactly an analogous case, is found in De Haen's *Ratio Medendi*, vol. iii., 1764, p. 31. The patient, who was 24 years old, had never menstruated, but had since the age of sixteen suffered with a hard swelling in the hypogastrium, which formed in the beginning an extremely hard but uniform zone around the umbilicus, and finally encompassed

the entire abdomen. After eight years of acute suffering it was discovered that she was afflicted with atresia. In 1761 an operation was determined upon by means of an incision into the hymen, when a great quantity of black blood escaped followed by death in a few hours.

The *autopsy* showed enormous moles of the uterus, and both sides of the monstrous tube formed together one solid mass that filled the whole hypogastrium. The abdominal cavity was filled with black, turbid, offensive fluid, which proved to have issued from small apertures of the decayed tube.

CASE III. (*Journal Universel des Sci. Medical*, Paris, vol. xxx., 1823, p. 100.)—Dr. Godelle reports a case, married, of rupture of right tube, supposed to have occurred in a rage, at the time of menstruation.

CASE IV. (*Sommaire des Trans. de la Soc. des Sciences Méd. du Dept. de la Moselle*, Metz, 1830-8, p. 63.)—Patient, æt. 38; no children; rupture of left tube three weeks over expected period. What appeared to be decidua was found in uterus. Rupture believed to be result of arrest of ovule in the tube.

CASE V.—A case is reported by William Munk, M.D., in the *London Med. Gazette*, vol. xxvii., 1841, p. 867. Patient, æt. 18, was found in articulo mortis, and died in a few hours; had never menstruated. Eighteen months before, at puberty, she suffered from headache, pain in the back and limbs, cold extremities, and dragging sensation in pelvic region. These symptoms soon subsided, but returned in five weeks; again ceased and then returned after a shorter interval. This state of things continued three or four months, the symptoms upon each recurrence remaining longer, whilst intermissions became shorter, so that at last there was no intermission but exacerbations occurring every fourth or fifth week. In January the lower part of the abdomen began to swell; pain in the pelvis, vomiting, and all the symptoms aggravated. In a few days, when stooping, she felt something give way within her, and the swelling and pain subsided temporarily. She died in four days.

Autopsy showed a large quantity of dark-red thickish fluid in the abdomen. Uterus larger than a man's fist and flaccid. On opening it found three or four ounces of same kind of fluid. Fallopian tubes distended so as to admit the little finger. A fissure about two inches in length was found near the fimbriated extremity of left tube, accounting for hemorrhage.

CASE VI. (*Casper's Wochenschrift*, 1846, Berlin, p. 325.)—A case is reported showing rupture of left tube six weeks after menses; patient was 37, married, and had children. The author attributed rupture to tubal pregnancy. A coagulum resembling a mole was found in uterus which was enlarged on ruptured side. Ostinum internum closed.

CASE VII.—In the *Provincial Med. and Surg. Jour.*, London, 1848, p. 104, a case is reported by Mr. Russell, presented before the Birmingham Pathological Society, showing rupture of the left tube, supposed during the passage of an ovum, in a young newly married woman two weeks after menstruation. Mr. R. found her in collapse, abdomen tympanitic and tender; she referred her pain chiefly to præcordia; died in a few hours.

At the *autopsy* blood was found in abdomen and pelvis; the rupture was near junction of middle and inner third, the walls of ruptured portion thin and distended by a mass of fibrin in which no ovum was discoverable. Uterus enlarged and contained a deposit of decidua.

CASE VIII. (*Gaz. des Hôp.* Paris, 1847, p. 155.)—Case 36 years old, one child. The right tube was ruptured and dilated to the size of finger—tube contained clots—bloody mucus in uterus. Some days before death, had attendant catamenial discharge.

CASE IX.—In the *Bulletin de l'Académie de Médecine*, Paris, vol. xxi., 1855-6, p. 21, a case is reported during catamenial flow, æt. 39, mother of four children. Left tube was found ruptured at junction of inner third with outer two-thirds; the internal third for half its length was dilated and contained a blood clot. No tubal pregnancy. No trace of blood in uterus.

CASE X.—In Warren's *Surgical Observations*, 1858, p. 292, a case, æt. 40, is reported of rupture of left tube from retained menstrual fluid on account of occlusion of the uterus. There was no communication between tube and uterus. Patient had a very severe confinement four years previously, and had not menstruated since.

CASE XI.—A case is reported in the Extracts from the Records of the Boston Society for Medical Improvement, by Dr. F. Minot (*Boston Med. and Surg. Journ.* vol. lxiv., 1861, p. 249).

Autopsy, by Dr. L. R. Stone, showed rupture of the left Fallopian tube and copious effusion of blood into the peritoneal cavity in a non-pregnant woman. Patient was 19 years old, and had one child a year and a half old. The morning she was seized she got up as usual perfectly well, and dressed her child; went out a few minutes, came back and threw herself on the bed, complaining of pain in the abdomen, coldness and thirst, feeble pulse, and great pallor. She died the same evening. About two quarts of blood was found in abdomen; uterus not enlarged. Fallopian tubes more injected than the uterus, but neither of them was distended nor discoloured. The left tube in its upper and posterior part, midway, showed an opening through its entire thickness, about one-quarter of an inch long, and from this opening there hung a coagulum. Nothing like an ovum was anywhere found. The tube having been cut open it was found it could be inflated from the fimbriated extremity, and pass a probe in from the uterus to near the seat of rupture, but nothing more was observed than would be seen in the unimpregnated condition. There was a large spurious corpus luteum in left ovary, and a smaller one in the right. There was a glairy mucous secretion in the cavity of the uterus, and profuse leucorrhœal discharge in the vagina. The catamenia was always regular, and the sister, who slept with the patient, reports that she was not menstruating at the time of her death, but was daily expecting to.

CASE XII. (*Medicins Correspondenz Blatt.*, vol. xxxiv., 1864, p. 110.)—Dr. Lechler reports a case 28 years old; married 8 months; healthy; menstruated regularly, period five days overdue; thought she was pregnant. Was attacked suddenly after sleep while making her bed, and died in a few hours. At the autopsy there was observed great anemia, and a large mass of blood in abdomen; left tube distended to size of walnut, with thin walls and blood-clot; rent in anterior upper side. Uterus that of a virgin, healthy and empty. No trace of ovum was found.

CASE XIII. (*Trans. N. Y. Obst. Soc.*, 1876-8, p. 156.)—A specimen, taken from a lady æt. 30, was presented by Dr. H. D. Nicoll, showing rupture of the left tube. She suffered from retroversion for several years; had had two children within two years before death—labours normal. Last menstruation occurred two weeks ago and was scanty. Since that time she had slight abdominal pains. On the morning of her death, immediately after sexual intercourse, she experienced a sudden violent pain in the lower part of the abdomen, followed by syncope and unconsciousness; was pulseless at the wrist. A vaginal examination revealed distinct fluctuation in Douglas's cul-de-sac. She rallied a while after restoratives, but again became collapsed and pulseless, dying in 12 hours from attack.

Autopsy showed abdominal cavity absolutely filled with blood, chiefly coagulated, both ostium internum and abdominale open. Viscera anæmic. The uterus was large and the mucous membrane tumefied, and ovaries contained each a corpus luteum. The rupture took place half an inch from uterus; tube was swollen to the size of a hazel-nut, the opening being one-quarter of an inch long on the posterior aspect, and containing coagulum.

The pathologist, Dr. M. D. Mann, after describing the conditions found, concludes as follows: "We are forced by the resemblance of this to other described cases, by the presence of the corpus luteum, and by exclusion, to consider this as a case of tubal pregnancy. The absence of the ovum, and the failure in the development of the uteri decidua, usually seen in these cases, may cast some doubts on the diagnosis. But we can easily account for the absence of the ovum by supposing that it was expelled through the rent in the walls of the sac at the time of the hemorrhage and lost among the clots. We cannot imagine any other conditions which could have produced similar results. Disease of a vessel with apoplexy, an ulcerative action in the mucous membrane opening into a vessel, formation of an abscess in the tube, with subsequent rupture, are all easily excluded, on account of the healthy condition of the other tube, and the remaining portion of this."

CASE XIV.—Dr. A. E. A. Lawrence reports the following case in the *Trans.*

Obst. Soc. London, vol. xx., 1879, p. 292. Patient was admitted into the Bristol Gen. Hospital, suffering from endometritis, and for this he applied nitric acid to the interior of the uterus, after previously dilating the cervix with a tangle tent. The woman did well for four days, when peritonitis set in, and she died in three days. The *post mortem* showed peritonitis most marked in pelvic region. The left Fallopian tube was dilated into a cyst, the right was much dilated and thickened, and had given way; the interior of the uterus presented usual appearance of granular endometritis. The doctor did not attribute the fatal termination to the acid application; but he believed the immediate cause of the rupture was probably due to over-distension by menstrual secretion. Menstruation was coincident with the development of peritonitis.

CASE XV.—In the *Lancet* for 1879, vol. ii. p. 120. By Henry Fisher, M.D., rupture of both tubes is reported during labour. Woman 40, and feeble, temperate, and healthy; 5 children.

CASE XVI.—In the *Lancet* for 1880, vol. i. p. 525, a case is reported by C. J. R. Owen, M.R.C.S. Patient aged 39; married 20 years; had 4 children, youngest 21 months; no miscarriages; taken ill Jan. 8, 1880. Had rheumatic fever when young, but heart was not affected. Catamenia began at 14; natural every 4 weeks, latterly every 3 weeks; has lately grown fat, and her strength was severely taxed from nursing a sick child; last period was natural, but ever since has suffered much from pains in the back and stomach. January 7th she thought her period had come on, but as there was only a slight show, concluded it had passed off. Next morning she had been reaching about a good deal, when she suddenly felt "something give" in her right side, and fainted away. In the afternoon when she was first seen, she had been very sick, and only recovered from one faint to go into another. In the intervals she was sensible, and complained of severe pain in right iliac and hypochondriac regions, not increased by pressure. Face and hands cold and moist; no pulse in radial, carotid, or temporal arteries. Tongue clean, pale, and flabby; heart's action intensified; no bruit; chest normal, also abdomen. The doctor conjectured some small vessel had given way, but where, it was impossible to say. Ordinary remedies for collapse were ordered, and at midnight she rallied; pain much less; respiration 36, "sighing;" temperature 96.6° in mouth; radial was now felt at 120. Next day about noon she became unconscious and died soon after.

The *post mortem* showed much adipose tissue on abdomen; lungs and heart healthy. The abdomen was found to be full of thin pale blood; organs healthy, but very pale; from the right side a quart of thick black clots were removed; ovaries small, cystic, and atrophied; left Fallopian tube small. In the right one, one-quarter inch from uterus, an opening of the size of a horse-bean was seen, from which a little fibrinous material was oozing; the tube was enlarged throughout its entire length to the size of a pipe-stem, but where the opening existed it was as large as a No. 10 catheter. Uterus stained and congested near tube, and uterine mucous membrane thickened; the opening was in upper aspect of tube. The absence of peritonitis was thought remarkable, but it was probably due to exhaustion from the hemorrhage. The length of time the patient lived showed the bleeding was from a small vessel. The most plausible theory of the rupture seems to be that the patient caught cold at her period in December; that inflammation of the tube followed, possibly ending in abscess, and that the exertion brought about the fatal result.

CASE XVII.—Mr. Marsh, who made the autopsy, said before commencing the operation, that the last private examination he had made was on the body of a young unmarried lady who had caught cold at her period, and died from rupture of the Fallopian tube; and here also there was no peritonitis. He had never seen a similar case out of many thousand *post mortems*.

CASE XVIII.—A case by Dr. Godson, presented before the Obstetrical Society, appears in the *London Med. Times and Gaz.*, vol. i., 1880, p. 193. The patient, æt. 30, was married two months; menstruation had been regular; the period commenced four days before her death at its proper time. During this day whilst walking she suffered acute pain in the left iliac region, nearly fainting. This passed off, but recurred four days after while menstruating. Collapse and the general signs of internal hemorrhage followed, and she died in twelve hours.

Autopsy showed abdominal cavity to be full of fluid blood with large clots in

the pelvic portion. The left Fallopian tube was found distended in one part to the size of a small walnut, on the anterior aspect of which was a small irregular rent, which led into a cavity in the centre of what appeared to be organized blood clots. No evidence of an ovum could be discovered. The right ovary showed a well-marked corpus luteum. In the discussion that arose there was a difference of opinion as to whether or not tubal pregnancy existed. Dr. Godson could trace no signs, but he failed to account for the distension of the tube, both ends of which were patent.

CASE XIX.—In *New York Med. Journ.*, 1880, p. 522, is reported the case of a French woman, 49 years old, who had several children, complained of obstipation of fourteen days' duration. The *autopsy* showed signs of general peritonitis, and at the bottom of peritoneal cavity were found twelve ounces of pus. The right tube was dilated by a collection of pus, a rent in the sac showing the point where it had discharged. The left tube was also inflamed and dilated with exudation, but had not ruptured.

In the *St. Thomas Hospital Museum Catalogue*, London, vol. iii. p. 227, are found several specimens chiefly of cystic dilatation or degeneration, with occlusion of the tube.

The *post mortem* in the case of Miss Neilson, the actress, by Dr. Brouardel (*Med. Record*, vol. xviii., 1880, p. 363), disclosed rupture of a varicose vein in the left Fallopian tube, supposed to have occurred in her writhing. Two quarts and a half of blood were found in the peritoneal cavity, and the ruptured vein presented an orifice of from four to five millimetres in diameter.

According to Dr. W. E. Johnston, of Paris, for the last five years she had been under his treatment. She suffered principally from gastralgia, incident to dyspepsia, a form fantastic in its coming and going, and in her case dependent on moral causes as well as on errors of diet. Being out of the city, he did not attend her in the fatal attack, but he believed it might have been relieved then, as it often had been before, by a free use of morphine. Twelve hours from the commencement of her attack, during a most violent recurrence of the pain, she suddenly ceased to complain, went into a state of syncope, and died.

I have nothing to add in my case further than that I believe it to have been one of arrest of impregnated ovum in the tube. The enlarged uterus, the corpus luteum, and overdue menses, would seem to confirm this view. It may be admitted, also, that the bleeding had been going on slowly from the first moment of the attack, and suddenly increased the day of death. I am not convinced that a violent effort will rupture an organ in repose like a healthy Fallopian tube. If this were so it should occur oftener, for instance, during parturition, when the pressure and exertion combined are greater, perhaps, than in any other contingency. Another feature which must not be overlooked is, that all the ruptures occurred in married women, except the two cases who had never menstruated, and the one mentioned by Mr. Marsh. I cannot find a record of one attending the menstrual flow of a virgin. The interesting question, therefore, arises, can this accident, as claimed in one of the cases cited, and by Churchill and Rokitsanski, take place in a non-pregnant female without disease, atresia, or occlusion?

ARTICLE VII.

THE GEOGRAPHICAL AND CLIMATIC RELATIONS OF PNEUMONIA; A STATISTICAL STUDY. By E. SANDERS, M.D., late House Physician, Bellevue Hospital, New York; Attending Physician to Mt. Sinai Hospital Dispensary, Department of Internal Diseases.

ALMOST with the very birth of medicine attempts were made to trace the relations of climate to disease. From the nucleus created by the father of medicine, the number of works devoted to this subject has, with the increase of knowledge in other branches of medical science, gone on steadily increasing, till, at the present day, our shelves are fairly littered with them. Hippocrates paid particular attention to climatic influences, tracing out clearly, even with the imperfect appliances and lack of previous observations at his command, the characteristics assumed by diseases under the varying influences of heat and cold, wet and dry, and the directions of the winds, establishing from these relations the doctrine of medical constitutions, the deductions of which have hardly been surpassed even at the present day. Geographic distribution, however, he did not consider. Save in a few instances, climatic relations alone are those which seem to have attracted the attention of writers of the present day, and but little advance has been made in our knowledge of the geographic limits of disease. Yet as Chareot has said (*Clin. Lects. on the Diseases of Old Age*, N. Y., 1881, trans. by Leigh H. Hunt, p. 85), "Medical geography is, equally with historical pathology, one of the most fruitful means of investigation in etiological research. It enables us to become acquainted with the different regions of the globe in which certain diseases prevail, and thus allows upon the grandest scale a study of the cosmical, tellurial, and even anthropological conditions that may favour or hinder their development." In another place he further adds, "A medical geography has yet to be written. Under the influence of certain preconceived ideas, a deplorable confusion has arisen among all the diseases which trace their origin to cold; and it is easily understood how difficult becomes the task of criticism when observations made in remote regions are to be examined and tested," and to no disease may these remarks be more appropriately applied than to pneumonia, the disease which above all others has been supposed to be dependent upon cold as its great etiological factor. It has been truly said by Mühry that diseases have not been thrown at haphazard over the face of the earth. Each country has its own distinctive diseases, as well as its own fauna and flora. Diseases, like plants and animals, flourish only within certain geographical limits, or have a definite distribution where certain influences prevail, beyond which they cannot go without the risk of disappearing. Of all the climatic relations of disease, the most important is the latitudinal. Yet with

the exception only of a few of the epidemic and paludal maladies, no attention, or at least but little, has been paid to the geographic distribution of the various wide-spread or endemic diseases from which man suffers; and with relation to pneumonia, as regards this question, the disease with which we are more particularly concerned, there is but one article, as far as I am aware, devoted to the discussion of this subject, this being a statistical paper by Von Ziemssen, published many years ago, wherein it is claimed, on insufficient data I believe, that it cannot be maintained that pneumonia appears absolutely more wide-spread and more frequent in one climate than in another (*Canstatt's Jahrb.*, bd. ii., 1857, S. 119). It has been estimated (Juergensen, Korányi) that primary pneumonia comprises 3 per cent. of all sickness in France, Germany, and England, and 6 per cent. of all internal diseases, while it also causes 6.6 per cent. of all deaths, or 12.7 per cent. of the mortality from internal maladies. From statistics collected by me, I obtain for 68 cities of Europe, having an average death-rate of 26.7 per 1000 of population, a mortality from pneumonia of 6 per cent. of all deaths, or a death-rate of 1.6 per 1000 living; while for 106 American towns and cities, the average death-rate for these being 20.4 per 1000 inhabitants, the proportions are 6.1 per cent. of all deaths, or 1.2 in every 1000 population die of this disease. Besides these cities I have returns for 16 others, 4 being situated in Central America, 4 in South America, 2 in Asia, 2 in Africa, 2 in Australia, and one each in Cuba and the Sandwich Islands; these cities, showing an average death-rate of 47.4, have a mortality from pneumonia of 1.7 per 1000 living, while it causes 4.6 of all deaths. As an average of these 190 towns and cities the world over, I obtain for the disease the ratios 1.4 for each 1000 of population, or 5.9 per cent. of all deaths.

From the eighth and ninth census reports of the United States, the results obtained for the country as a whole, are a pneumonia rate of 0.98 per 1000 inhabitants, or 7.8 per cent. of all deaths are found to be due to pneumonia. The following table will show these death-rates for the various countries of the globe:—

	Pneumonia.			
	Per 1000 Inhabitants.	Per cent. of deaths.	Death- rate.	No. of cities.
North America	1.21	6.1	20.4	106
Central America	1.82	2.6	84.8	4
South America	1.61	5.8	30.9	4
Cuba	1.40	2.8	43.0	1
Sandwich Islands	0.61	2.0	37.4	1
Europe	1.57	6.0	26.7	68
Asia (Hindustan)	1.43	6.8	48.3	2
Africa	3.62	9.1	39.4	2
Australia	0.72	3.6	21.2	2
World over	1.38	5.9	24.8	190

In a paper read before the New York Academy of Medicine, and published in the *Archives of Medicine*, June and August, 1881, I called

particular attention to the fact that pneumonia had a distinct, well-marked, and characteristic distribution over the face of the earth, but, at the same time, admitted that the statistics on which this conclusion was then based were too imperfect and scanty for anything like positive deductions. I quote from this article: "Pneumonia, all other things being equal, increases uniformly in frequency the nearer we approach the tropics. That is to say, and the fact is a surprising one, and one directly opposed to its presumed dependence on cold, the disease is more commonly met with, is more frequent in warm than in cold climates, and in hot than in warm climates, showing a gradually increasing ratio from the poles to the equator. Such is undoubtedly true of the United States; and as far as shown by the statistics I have been able to gather, which, it must be confessed, are not as numerous as could be wished, also of foreign countries." Since then I have succeeded in collecting a large series of statistics bearing upon this matter, from which I have been enabled to deduce the geographical and climatic relations of the disease. I shall first consider the various perturbing circumstances which may affect the distribution of the disease, taking up in detail the effects of altitude, rain-fall, temperature, actual population, and density of population, death-rate, longitude, etc. etc.; finally, discussing its most important relation, the latitudinal.

Obviously, it would be unsatisfactory and far from convincing to base any positive statements upon statistics obtained from hospitals, naval, military, or the like sources, as Ziemssen and Hirsch have done, since, in such cases, we are dealing only with a particular class, and not with the generality of humanity that goes to make up the population of a State. Besides, in the instances of soldiers and sailors, the circumstances under which they may be placed at different times may vary greatly, whether in garrison or in the open, at sea or on land, either in time of war or peace. No positive or unimpeachable conclusions can, therefore, be deduced as regards the geographical distribution of pneumonia from such data, although they may, perhaps, lend a certain amount of secondary evidence in this direction. The most absolute data can only be obtained from the returns of countries and cities, embracing, as they do, the entire population, subjected to relatively similar circumstances of environment. Hence, in the discussion of the various questions that may arise, all deductions will be drawn from such returns for cities and countries only, statistics of special classes being discarded as not of general application.

1. *Elevation or Altitude above the Sea-level.*—Toner, in the introduction to his *Dictionary of Elevations and Climatic Register of the United States*, New York, 1874, page v., writes, "We suppose it will be admitted without question, that in general the elevated regions of the world—the hills, the forests, and the high plateaus, and the mountains in the temperate and torrid zones—are more salubrious than the low alluvial and tide-water plains, and contribute more to the strength, vigour, hardihood,

and, we might add, happiness of our race," while, later on, page xxiv., he further says, "we think it exceedingly probable that health and diseases of various types are as much affected by climatic influences, induced by altitude, as by latitude and longitude." Such being then the importance of this element on climate and disease, a careful study of its relations to pneumonia must obviously be of great interest.

It has been claimed, and the most prominent and emphatic among those who have made this claim is Lombard, that pneumonia increases in a direct ratio the higher we ascend above the sea-level. It is a well-recognized fact that pestilential diseases prevail, are more common, below, at, or near the level of the sea. The most prominent of this class is yellow fever, which never prevails on the mountain tops or on elevated plains, but always in places situated in low-lying lands or along the sea-board. Typhoid, dysentery, cholera, and the paludal fevers are also instances where a similar rule prevails. It will be observed that all of these are members of the miasmatic or miasmatic-contagious class of diseases, a class to which it is believed by many that pneumonia belongs. As already stated, Lombard has claimed to have proven that the disease is most common in the high uplands or near the mountain's top, stating that "in Switzerland and Germany we have noticed the gradual increase of pneumonia with the altitude as the uniform result of the observations of a great number of practitioners dwelling in the high regions of these two countries, these having enabled me to show the frequency of pneumonia as one of the characteristics of the climate of mountains" (*Traité de Climatologie Médicale*, tome iv., Paris, 1880, p. 392). Let us see how statistics bear out this assertion of Lombard's. Geneva, a city placed at 1280 feet above the sea-level, shows a death-rate from pneumonia of 1.1 per 1000 inhabitants; while Basle, situated fully 400 feet lower, presents a rate of 1.9 per 1000 living. Again, we have Munich, of which it has justly been said that but few cities of the world have so small a number of deaths from the disease, its rate being 0.54 per 1000 of population, yet it is located at an altitude of 1690 feet. Halle, with an elevation of but 364 feet, has a death-rate from this malady of 2.3 to every 1000 of its inhabitants; with Wurzburg, at 561 feet, having but 1.5; while Trieste, at 285 feet, shows the high rate of 2.3; Genoa, at 177 feet, presents 3.3; and Marseilles, at 150 feet, 3.7. Take a few examples from our own country. Denver, lying at an elevation of 5269 feet, has a death-rate of but 0.34; Boulder, at 5250 feet, a rate of 0.71; Winona, at 1500 feet, 0.81; Burlington, Iowa, at 940 feet, 0.38; while Augusta, Ga., at 185 feet, shows 3.0; Washington, D. C., at 45 feet, 2.19; New York, at 35 feet, 2.19; Jersey City, at 30 feet, 1.79; Savannah, at 20 feet, 3.52; Norfolk, at 15 feet, 2.21; and Stamford, Conn., at 10 feet, 1.86 per 1000 living. Such are but a few of many instances that might be presented. The relation of altitude to pneumonia, certainly in our own country, is positive, showing a gradually decreasing

ratio as we ascend, a conclusion, therefore, diametrically opposed to that of Lombard's. My statistics embrace those of the various States obtained from the eighth and ninth census reports, as also the returns for ninety-eight of our American towns and cities. The altitudes were obtained from Toner's work already quoted, and in each instance represent the mean elevation of the place or State above the sea-level.

For the States the following *résumé* is presented :—

No. of States.	Elevation.	Per 1000 inhabitants.	No. of States.	Elevation.	Per 1000 inhabitants.	No. of States.	Elevation.	Per 1000 inhabitants.
5	50 to 200 ft.	1.11	7	50 to 300 ft.	1.12	15	50 to 500 ft.	1.21
8	200 " 400 "	1.25	10	300 " 600 "	1.23	16	500 " 1000 "	0.85
4	400 " 600 "	1.13	13	600 " 900 "	0.85	7	1000 " 7000 "	0.78
8	600 " 800 "	0.83	4	900 " 2000 "	0.86			
6	800 " 1000 "	0.83	4	2000 " 7000 "	0.66			
4	1000 " 2500 "	0.79						
3	2500 " 7000 "	0.77						

Let us now review the returns for our cities.

No. of cities.	Elevation.	Per 1000 inhabitants.	No. of cities.	Elevation.	Per 1000 inhabitants.	No. of cities.	Elevation.	Per 1000 inhabitants.
49	0 to 200 ft.	1.30	56	0 to 300 ft.	1.32	68	0 to 500 ft.	1.30
13	200 " 400 "	1.44	22	300 " 600 "	1.16	26	500 " 1000 "	0.98
16	400 " 600 "	1.06	14	600 " 900 "	0.84	4	Above 1000 "	0.73
12	600 " 800 "	0.85	3	900 " 1200 "	0.86			
4	800 " 1000 "	0.97	3	Above 1200 "	0.62			
4	Above 1000 "	0.73						

Such are the facts drawn from the statistics of North America, and they certainly show in a most striking and decided manner the fact that with increase in elevation there is a coincident and gradual decrease in the mortality from pneumonia, all other things being equal. In studying this question, as related to the cities of Europe, I am met by the difficulty in obtaining the mean elevations of the various places, being enabled to do so only in thirty-nine instances. Still, as far as they go, they certainly seem to bear out the above conclusion, at least they cannot be claimed to contradict it.

No. of cities.	Elevation.	Per 1000 inhabitants.
28	0 to 500 feet.	1.83
9	500 " 1000 "	2.05
2	above 1000 "	0.82

Fonssagrives (*Hygiène et assainissement des Villes*, Paris, 1874, p. 75) has divided cities on the basis of the influence of altitude upon the climate of the locality, into five classes: 1st, those situated at an elevation of from 6560 to 14,150 feet; 2d, those at from 3280 to 6560 feet; 3d, those at from 985 to 3280 feet; 4th, those at from 165 to 985 feet; and, 5th, those from 15 feet below to 165 feet above the sea-level. Adopting this classification and arranging according to this principle cities the world over, I get the following results from the study of 146 such places :—

No. of cities.	Elevation.	Per 1000 inhabitants.
67	5th class.	1.38
71	4th "	1.47
5	3d "	1.08
2	2d "	0.53
1	1st "	0.61

Again, showing this steady decrease with increase in altitude. Now what are the opinions of authors upon this question of the relation of altitude to the pneumonia rate? Lombard, as already stated, believes that it steadily increases with increase in elevation, being most commonly met with on high uplands and the mountains, least in the low-lying valleys. He instances the so-called *Alpen-stich*. Unfortunately for his side of the question, this is not pneumonia, but rather a complex of diseases, being most frequently a malignant form of pleurisy. Besides, the very countries that he indicates, as well as the other States of Europe, are characterized not by the greater prevalence of the disease at high altitudes, but rather the contrary, as shown by the facts already quoted. Geneva, Wurzburg, Munich, Prague, Frankfurt, all present low death-rates from pneumonia, though situated at altitudes ranging from 427 to 1690 feet above the sea-level; whereas, Halle, Trieste, Paris, Bologna, Marseilles, all have high death-rates from the disease, though placed at points ranging at but from 200 to 375 feet above the surface of the sea. Hirsch apparently is of the opinion that the malady is common at high altitudes, but, as Juergensen justly claims, the data on which he bases this conclusion are not trustworthy. This latter author expresses himself as in doubt, though apparently leaning to an opinion opposed to that of the former. He, however, considers the question as still unsettled. Ziemssen, on the contrary, deduces from his statistics that the disease is most common in the plains.

2. *Rain-fall*.—It has been shown by Sturges that any considerable amount of wet has no tendency to heighten the pneumonia rate, the very lowest numbers of this disease, out of ten years, being found to follow weeks of excessive rain (*On Pneumonia; its Natural History and Relations; a Clinical Study*, London, 1876, p. 141). From such facts it would seem that pneumonia bore some relation to the rain-fall, still I am unable to trace such a connection clearly enough to convince myself of its existence. Although it is true, generally speaking, that the annual amount of precipitation increases the nearer we approach the tropics, still this increase is far from absolute or uniform, as a glance at Blodgett's Climatological Map of the United States, or the Precipitation Charts of the Signal Service Bureau, or the Map, by Prof. E. Loomis, of the mean annual rain-fall of the world (*American Journal of Science*, Jan. 1882), will show. A somewhat similar irregularity is found as regards the relations of pneumonia to the mean annual rain-fall, as shown by the following tables representing the results obtained from a study of 106 North American cities, the facts relating to the mean annual precipitation being ob-

tained from such standard sources as Blodgett's *Climatology of the United States*, Philadelphia, 1857; Annual Reports of the Chief Signal Officer of the United States; and Gray's *National Atlas*, Philadelphia, 1881, article on Climatology, by Lorin Blodgett, p. 215, *et seq.*, and Loomis's article in the *American Journal of Science*, already mentioned.

No. of cities.	Amount of rain.	Per 1000 inhabitants.	No. of cities.	Amount of rain.	Per 1000 inhabitants.
4	10 to 20 inches.	1.16	8	10 to 30 inches.	1.32
4	20 " 30 "	1.48	91	30 " 50 "	1.14
27	30 " 40 "	0.98	7	50 " 70 "	1.98
64	40 " 50 "	1.21			
5	50 " 60 "	2.42			
2	60 " 70 "	0.92			

The facts which I have collected relating to European cities are, unfortunately, as in the case of altitude, too few for anything like reliable deductions, though, as far as they go, they bear out the conclusion already arrived at.

No. of cities.	Amount of rain.	Per 1000 inhabitants.	No. of cities.	Amount of rain.	Per 1000 inhabitants.
4	15 to 20 inches.	2.62	10	15 to 25 inches.	2.26
17	20 " 30 "	1.44	17	25 " 35 "	1.24
10	30 " 40 "	1.29	6	35 " 45 "	1.33
2	40 " 50 "	1.88			

3. *Death-rate.*—It may be taken as a general conclusion that the nearer we approach the tropics the higher the death-rate in cities. This is undoubtedly true of both Europe and America, as might easily be shown here, but a discussion of such a question would carry us too far, and, besides, is foreign to our subject. The fact being granted, with increase in death-rate, it is found that there is a similar relative increase in the pneumonia rate, as clearly shown by the following, deduced from the study of 106 American, 68 European, and 8 other towns and cities scattered the world over.

Death rate per 1000 living.	Pneumonia-rate per 1000 living.				Both.		The world over.	
	America.	No. of cities.	Europe.	No. of cities.	Per 1000 inhabit'nts	No. of cities.	Per 1000 inhab's.	No. of cities.
5 to 10	0.38	1			0.38	1	0.38	1
10 " 15	0.81	17			0.81	17	0.81	17
15 " 20	1.09	34	0.80	2	1.07	36	1.07	36
20 " 25	1.20	33	1.34	25	1.26	58	1.25	61
25 " 30	1.83	15	1.43	29	1.57	44	1.57	44
30 " 35	1.34	5	2.59	7	2.07	12	2.20	13
35 " 40			2.35	5	2.35	5	2.12	7
40 " 45	3.52	1			3.52	1	2.28	3

The fact that the American cities show a lower death-rate than those of Europe, is explained in part on the ground, that of the latter my list embraces, save with a few exceptions, large cities only; whereas the former includes a great many of our smaller towns; it being a well-known

and recognized circumstance that the death-rate of a city bears a direct relation to the number and density of its population.

4. *Population—Density of Population.*—As might be expected, pneumonia occurs more frequently in large than in small cities, while cities taken as a class show a larger relative death-rate from the disease than the country, that is city dwellers suffer from the disease to a greater extent than those belonging to the rural population. This is not a new fact, for both Ziemssen and Hirsch have shown such to be the case many years ago. Still, to render certainty doubly sure, a simple statement can hardly be considered sufficient, and the following table is, therefore, presented, giving a comparison between various States and cities of States:—

States.	Per 1000 inhab's.			States.	Per 1000 inhab's.		
	State.	Cities.	No. of cities.		State.	Cities.	No. of cities.
Ala.	1.47	1.44	2	Miss.	1.68	0.84	1
Ark.	2.98	3.48	1	Mo.	1.41	1.28	1
Cal.	0.65	1.15	4	Neb.	0.93	1.15	1
Col.	0.48	0.53	2	Nev.	1.18	2.61	1
D. of C.	0.98	2.19	1	N. H.	0.96	1.13	1
Conn.	0.72	0.95	11	N. J.	0.59	1.28	3
Del.	0.68	0.84	1	N. Y.	0.87	1.13	13
Fla.	1.39	0.97	1	N. C.	0.80	1.08	1
Ga.	1.17	3.26	2	Ohio,	0.65	0.94	5
Ill.	0.96	0.82	4	Penna.	0.58	0.99	6
Ind.	0.88	1.07	4	R. I.	0.78	1.15	2
Iowa,	0.61	0.38	1	S. C.	1.26	1.26	1
Ky.	0.95	1.24	2	Tenn.	1.04	1.60	3
La.	1.75	1.55	1	Texas,	1.58	1.53	3
Md.	0.70	1.33	1	Vt.	0.59	1.06	1
Mass.	0.98	1.33	12	Va. }	0.94	1.34	5
Mich.	0.67	0.83	2	W. Va. }			
Minn.	0.39	0.87	2	Wis.	0.50	0.82	1

Thus in 27 instances the pneumonia-rate is less throughout the State than in its cities, whereas the contrary held in but 9 instances. The same can be shown of foreign countries. Turning to Europe, we find a similar condition of affairs prevailing.

	Per 1000 inhabitants.		No. of cities.
	Country.	Cities.	
Belgium	0.85	1.74	2
Germany	1.34	1.54	19
England and Wales	1.03	1.22	13
Ireland	0.31	0.54	4
Scotland	0.73	1.12	8
Norway and Sweden	1.60	2.00	2
Switzerland	1.50	1.71	3
Italy	1.85	2.95	3

Showing in every instance a pneumonia death-rate in cities exceeding the average for the entire country; clearly indicating a greater predilection of city dwellers for the disease.

Again, statistics show that the disease is more common in large than in small cities; a fact that would almost necessarily follow from the preceding. For North America a *résumé* of 106 towns and cities, for Europe 70, and for the world over a total of 185, shows—

	North America.	No. of cities.	Europe.	No. of cities.
Over 500,000 population	1.55	4	1.99	7
From 200,000 to 500,000 population	1.44	6	1.97	14
“ 100,000 “ 200,000	1.29	10	1.58	27
“ 50,000 “ 100,000	0.98	13	1.35	16
“ 10,000 “ 50,000	1.21	67	1.19	6
Less than 10,000	1.10	6		

	N. America and Europe.	No. of cities.	World over.	No. of cities.
Over 1,000,000 population	1.66	4	1.66	4
From 500,000 to 1,000,000 population	1.93	7	1.86	8
“ 200,000 “ 500,000	1.81	20	1.75	22
“ 100,000 “ 200,000	1.49	37	1.47	39
“ 50,000 “ 100,000	1.18	29	1.28	31
“ 10,000 “ 50,000	1.21	73	1.21	75
Less than 10,000	1.10	6	1.10	6

That crowd-poison bears a more or less direct etiological relation to pneumonia has more than once been referred to by authors. According to returns from various sources, the disease would seem to be considerably more frequent in the poorer quarters of towns than among the wealthy. In the reports of a number of epidemics of pneumonia, overcrowding plays a very important part, occurring as they did in cloisters, prisons, barracks, on board ship, in tenements, and the like. That the disease is most frequent in the poorer quarters of Paris has been positively proven by Vacher. Thus he shows that the proportion of deaths by pneumonia is about twice as large in the poor arrondissements as in those of the rich, four of this latter class exhibiting a rate of 0.89 per 1000 inhabitants, while four poor districts presented a rate of 1.74 per 1000 of its dwellers (*Etude Méd. et Statistique sur la Mortalité, etc., en 1865*, Paris, 1866, p. 139). That the same is true of our own cities might easily be demonstrated; suffice here the simple statement that statistics prove such to be the case. It may be considered the rule that in cities the districts in which the poor reside show greater density of population than the quarters of the better classes. Hence, if this frequency of the disease among the poor be dependent upon overcrowding or crowd-poison, the death-rate from this malady should vary with the density of population. That such is the case is proven by such figures as the following :—

Inhabitants per square mile.	North America	No. of cities	Europe.	No. of cities	Both.	No. of cities	World over.	No. of cities
60,000 to 70,000 persons			1.76	2	1.76	2	1.76	2
50,000 “ 60,000 “	2.19	1	1.88	2	1.98	3	2.07	5
40,000 “ 50,000 “			1.73	3	1.73	3	1.73	3
30,000 “ 40,000 “	0.85	1	1.54	3	1.37	4	1.37	4
20,000 “ 30,000 “	1.55	3	1.18	6	1.30	9	1.30	9
10,000 “ 20,000 “	1.37	8	1.18	6	1.29	14	1.29	14
5,000 “ 10,000 “	1.16	17	1.95	2	1.25	19	1.25	19
1,000 “ 5000 “	1.17	12	2.06	1	1.24	13	1.24	13
Less than 1000 “	1.43	4			1.43	4	1.43	4

Still further evidence is found in the connection between the pneumonia-rate and the number of dwellers per house of each city. I have succeeded in establishing this relation for 41 cities of the United States, with a result bearing out in a most unmistakable manner this assumed dependence upon crowd-poison.

Inhabitants per house.	Per 1000 inhabitants.	No. of cities.
14 to 15	2.19	1
8 " 9	1.64	4
7 " 8	1.16	6
6 " 7	1.31	17
5 " 6	1.10	13

5. *Temperature.*—To me the etiological factor cold has appeared very much like the pathological term "functional," merely an expression of our ignorance. As our knowledge of morbid anatomy increases, the number of so-called functional diseases steadily grows less. And so it is with maladies assumed to be due to "catching cold;" a class which the older physicians were so fond of grouping under the generic name of rheumatic affections, one formerly embracing a large number of diseases. Were it true that pneumonia is directly related to cold, it would necessarily follow that, with a low mean annual temperature, the pneumonia-rate must undoubtedly be high. Now to settle this question with as much certainty as possible, it is deemed best to study it from all points, being well aware that, if the geographical distribution bear any definite relation to the temperature, by such a study alone can this fact be made apparent. It will hardly be disputed that, generally speaking, the nearer the equator, the higher the mean annual temperature of a place—the nearer the poles, the lower the temperature. Roehard (*Nouveau Dictionnaire de Méd. et de Chirurg. Pratiques*, tome viii., Paris, 1868, art. Climat.) has divided climates as related to temperature into five classes: 1st, the torrid, extending from the thermal equator to the isothermal line of 77° F.; 2d, the warm, extending from the line of 77° F. to that of 59° F.; 3d, the temperate, comprised between that of 59° F. and that of 41° F.; 4th, the cold, lying between the isothermals of 41° F. and 23° F.; and, 5th, the polar, between 23° F. and 5° F. For the first and fifth of these classes, statistics of pneumonia are almost entirely wanting, and, when obtained, so very imperfect as to be absolutely useless for our purpose. Those that I have arranged, according to this classification show for warm climates an average of 1.70 deaths from pneumonia for each 1000 of population, based on the returns of 157 cities; while cities located in the temperate climates present an average of 1.31 per 1000 inhabitants, deduced from the returns of 15 cities.

Contrary to what has been maintained by many, a high mean annual temperature means a high death-rate from pneumonia. The proof of this statement lies in the various tables now presented.

Thus, for North America and Europe, a tabulation of 172 towns and cities shows such to be a fact in a most striking manner.

Mean temp. (F.)	North America.	No. of cities.	Europe.	No. of cities.
65° to 70°	1.70	11		
60° " 65°	1.72	4		
55° " 60°	1.41	9	2.36	5
50° " 55°	1.21	27	1.54	17
45° " 50°	1.00	50	1.47	44
40° " 45°	1.01	3	1.99	2

Again, according to Boudin, it has been shown that in the Northern Hemisphere, in the system of Eastern America, that is, along the Atlantic seaboard, the mean annual temperature increases according to a certain definite ratio. Thus, for each degree of latitude from the coast of Labrador to Boston, the increment of increase is 1.58° F.; from Boston to Charleston, S. C., 1.71° F.; from Charleston to the Tropic of Cancer, 1.19° F. In Central Europe, between the parallels 71° and 38° , the temperature rises uniformly 0.90° F. for each degree of latitude. Constructing a table on this basis, to show that there can here be no mere juggling of figures, we obtain for North America:—

Latitude (N.)	Mean temp. (F.)	Pneu. per 1000 inhabitants.	Increment of increase in temperature.	Pneu. increase or decrease.		Increment of increase or decrease of pneu.
				Per 3° lat.	Per 1° lat.	
29°-32°	70° to 66.4°	1.275	1.58°	1.061(—)	0.354(—)	0.354(—)
32-35	66.4 " 61.7	2.336	1.71	1.014	0.338	0.142
35-38	61.7 " 56.6	1.332		0.097	0.032	
38-41	56.6 " 51.4	1.224	1.19	0.165	0.055	0.055
41-44	51.4 " 46.5	1.059		0.164	0.055	
44-46	46.5 " 43.4	0.885				

Or arranging according to a slightly different method we get—

Latitude (N.).	Mean temp. (F.).	Pneumonia per 1000 inhabitants.	Increase or decrease in pneumonia.	
			Per 5° of lat.	Per 1° of lat.
29°-30°	70° to 68.8°	1.267	0.647 (—)	0.129 (—)
30-35	68.8 " 61.7	1.914	0.626	0.125
35-40	61.7 " 53.1	1.288	0.216	0.043
40-45	53.1 " 44.9	1.072	0.224	0.045
45-46	44.9 " 43.4	0.847		

While for Europe these relations are:—

Latitude (N.)	Mean temp. (F.).	Pneumonia per 1000 inhabitants.	Increase or decrease in pneumonia.	
			Per 5° of lat.	Per 1° of lat.
43°-46°	58° to 56.2°	2.917	1.062	0.354
46-49	56.2 " 53.5	1.855	0.335	0.112
49-52	53.5 " 50.8	1.520	0.342	0.114
52-55	50.8 " 48.1	1.178	0.012	0.004
55-58	48.1 " 45.4	1.166	0.825 (—)	0.275 (—)
58-60	45.4 " 42.7	1.991		

Or again—

Latitude (N.).	Mean temp. (F.).	Pneumonia per 1000 inhabitants.	Increase or decrease in pneumonia.	
			Per 5° of lat.	Per 1° of lat.
43°-45°	58° to 53.5°	3.515	1.585	0.317
45-50	53.5 " 49	1.930	0.634	0.127
50-55	49 " 44.5	1.296	0.020 (—)	0.004 (—)
55-60	44.5 " 42.7	1.316		

Showing an almost steady increase in the pneumonia death-rate with a higher rate of mean annual temperature. It will be observed, however, that in the case of both North America and Europe there is a marked exception to this rule, in the former for the highest temperature, 68.8° to 70°, showing a decrease of 0.647 per 1000 of population in the pneumonia death-rate, while in the latter this is offset by a depression of 0.825 for low temperature, 45.4° to 42.7°. Thus, following Boudin's data, in whatever way we examine the relation of mean annual temperature to the pneumonia-rate, we find the same rule holding good; with increase in the former there is an almost uniform increase in the latter.

Turning now to the relation of the prevalence of the disease in various countries to this question. I have elsewhere shown (*Arch. of Med.*, June, 1881) that for the United States, the disease is more frequent in our Southern than in our Northern States, the former having a much higher annual temperature than the latter; and so clearly is this shown by the figures there presented, obtained from the eighth and ninth census reports, and so important do I deem them in the discussion of this point, that I again present them here in the form of a *résumé*, so modified, however, as to show at a glance their thermometrical relations to the malady.

No. of States.	Mean temperature (F.).	Pneumonia per 1000 inhabitants.
1	36.2°	0.39
4	40.8° to 44.6°	0.71
10	45.9 " 49.6	0.80
8	51. " 54.6	0.86
6	55.3 " 58.6	0.96
6	60. " 64.	1.46
3	66.4 " 69.6	1.41

Again, showing this steady increase before indicated, with, at the same time, the slight decrease for very high temperatures, a significant coincidence. For Europe the following is the result:—

No. of countries, etc.	Mean temperature (F.).	Pneumonia per 1000 inhabitants.
1	35.5°	0.79
7	42.° to 49.5°	1.06
3	50. " 58.	1.22

On studying this question after another method, that is by tabulating according to the mean annual temperatures and average pneumonia-rates of the cities of the various countries of Europe for which I have returns, the result as reached may be shown as follows:—

Countries.	Average mean temp. (F.) of cities.	Pneu. per 1000 inhabitants.	No. of cities.
Norway and Sweden	42.2°	1.99	2
Denmark	45.7	1.57	1
Prussia	48.2	1.57	14
England and Wales	48.3	1.22	13
German Empire	48.5	1.54	19
Scotland	48.8	1.12	8
Switzerland	48.8	1.71	3
Bavaria	49.3	1.02	2
Netherlands	49.8	1.90	2
Belgium	50.4	1.74	2
Austro-Hungary	51.1	2.42	4
Ireland	52.0	0.54	4
France	54.6	1.90	6
Italy	55.2	2.95	3

RÉSUMÉ

Average mean temperature.	Per 1000 inhabitants.	No. of countries.
42.2°	1.99	1
45.7° to 49.8°	1.46	8
50.4 " 54.6	1.65	4
55.2	2.95	1

6. *Relations to the Sea Coast.*—I had at first thought that those cities situated near or on the sea presented a greater prevalence of pneumonia than inland towns, but a more careful study of my statistics soon convinced me that such was not the case. As regards North America, lake ports show a smaller rate than inland towns, and these latter than sea-port towns, that is those situated on the ocean; while the relation for European cities differs somewhat from the foregoing, those located along the shores of inland seas presenting the largest mortality from the disease, next in order coming inland cities, ocean ports, properly so-called, exhibiting the lowest mortality. Thus:—

	Europe.	No. of cities.	North America.	No. of cities.
Lake or inland sea-ports	2.80	5	0.86	10
Ocean ports	1.07	14	1.36	26
Both	1.52	19	1.22	36
Inland towns	1.59	49	1.21	70

In the case of Europe, the cities situated along the shores of inland seas are, principally, those along the Mediterranean, thus accounting for the high rate of the pneumonia mortality; for it is a well-pronounced fact that cities placed on, or near, this sea, show a remarkable prevalence of the disease: Turin, Trieste, Bologna, Genoa, and Marseilles, all presenting an unusually high death-rate from this malady, ranging between 2.3 per 1000 living for Turin and 3.7 for Marseilles; while Algiers, placed on the southern shore of this sea, shows the exceedingly high rate of 3.8 per 1000 inhabitants.

7. *Longitude.*—In North America, as we pass westward, we observe a gradual but steady increase in the mortality from pneumonia, while, on the contrary, the reverse is true of Europe, for here there is a steady rise from west to east; a fact which it must be conceded is rather significant,

indicating in a most marked manner a positive relation to longitude. The increase being in the instance of the former country from east to west, and for the latter from west to east, there must necessarily be some intermediate line, possibly several lines, some degree or degrees of longitude, along which the disease must be supposed to reach its maximum of frequency. For North America my statistics of cities cover about 55 degrees of longitude, from the 70th to 125th meridian west from Greenwich; while for Europe they cover 40 degrees, that is from about 10° west to 30° east. Of the 106 American cities, all but eight lie east of the 100th meridian, hence the data of those beyond this meridian are to be considered very imperfect, allowing of no positive deductions. Those for Europe, however, are more evenly distributed, and, therefore, permit of more definite conclusions being drawn.

North America. Longitude (W.).	Pneu. per 1000 inhab's.	No. of cities.	Europe. Longitude.	Pneu. per 1000 inhab's.	No. of cities.
70° to 75°	1.17	38	10° W. to 5° W.	0.54	4
75 " 80	1.20	20	5 W. " 0	1.11	22
80 " 85	1.05	13	0 " 5 E.	1.81	7
85 " 90	1.26	15	5 E. " 10 E.	1.97	16
90 " 95	1.40	9	10 E. " 15 E.	1.55	14
95 " 100	1.47	3	15 E. " 20 E.	2.68	4
100 " 105	0.34	1	20 E. " 25 E.		0
105 " 110	0.71	1	25 E. " 30 E.	3.74	1
110 " 115	2.30	1			
115 " 120	1.80	2			
120 " 125	1.21	3			

Thus we observe from the above, that for North America there is an almost unbroken augmentation in the pneumonia mortality as we advance from the meridian of 70° to that of 100°. Beyond this line, as before indicated, we see that the data are too few for anything like receivable deductions. For Europe the result is the same for from 10° W. to 30° E., and even here more markedly than in the case of the former.

This fact holds true also of our various States, at least the data furnished by the 8th and 9th census reports point in a most positive manner in this direction. Without giving the statistics for the individual States, a simple *résumé* is deemed sufficient for our purpose.

States wholly or in great part between Long. (W.)	Pneu. per 1000 inhab's.	Pneu. per 1000 deaths.	No. of States.
65° and 75°	0.75	56.34	7
75 " 85	0.89	72.90	12
85 " 95	1.22	94.90	12
95 " 105	1.33	101.62	3
105 " 115	0.48	50.67	1
115 " 125	0.72	61.28	3

Again showing, we observe as in the case of the cities, this diminution in the pneumonia-rate after we have passed the 100th meridian. This may possibly be due to the paucity of our data beyond this line; yet as it occurs in both cases of cities and States, it is but fair to suppose that it indicates more than a simple coincidence.

8. *Latitude*.—Turning now to the most important element in the discussion of the geographical and climatological relations of pneumonia, latitude. It was claimed, quoting from a previous publication, in an earlier part of this article, that the nearer we approached the equator the more frequent the disease became. That this is true of countries from which reliable data have been obtained will presently be shown. Including all lands, statistics, good, bad, and indifferent, do not, however, seem to bear out this statement in its entirety; but only in so far as to prove a steady increase up to a certain parallel of latitude, for America apparently the 35° N., for Europe the rise being steady as far as my figures go, where the malady reaches its maximum, and beyond which it appears to diminish in frequency. Hence, a modification of the above conclusion would seem in order. Still, it may be maintained that nearness to the equator increases the tendency of man to suffer from this complaint, the uncertainty and lack of statistics for low latitudes being remembered. But let us see the actual facts. There is no geographical element so important in regulating the climate of a place as the latitude of that place. This goes without showing and cannot be disputed. Hence a careful discussion of its influence on pneumonia must be here entered into. Before proceeding to this let us first pass in review the opinions of authors on the question of the climatic and geographical relations of the disease.

Grisolle (*Traité Pratique de la Pneumonie*, Paris, 1841, p. 124) maintains that "pneumonia occurs in all countries of the globe, but its frequency is not the same in all. It is regarded as being a malady common in cold climates, rarer in temperate climates, and above all rarest in equatorial regions." Such is also the opinion of so great an authority as Lombard, who, writing as late as 1880 (*loc. cit.*, p. 391), claims that "the documents which I have passed in review are unanimous upon the great frequency of pneumonia in the cold regions." Reading further, we find that this claim is based upon the "documents" relating to polar America, New Britain, Labrador, this latter in particular, and Greenland. We may fairly conclude that deductions from such premises must be, to say the least, very imperfect and unsatisfactory, all facts relating to such places consisting merely in simple statements, unsupported by figures. He further adds that the foregoing is also true of the northern parts of Norway, of Sweden, of Finland, of Russia, and of Siberia; yet statistics for which, excepting, perhaps, for the first two, are wanting, or, if in existence, of so imperfect a character as to be absolutely useless. Such are his conclusions from such facts. As the result of the examination of a large number of statistics, chiefly, however, relating to soldiers and sailors, Ziemssen (*Canstatt's Jahrb.*, bd. ii., 1857, S. 130) concludes that it cannot be maintained that it (pneumonia) appears absolutely more widespread and more frequent in one climate than in another; while Hirsch (*Handbuch der historisch-geographischen Pathologie*, 2er bd., Erlangen,

1862-1864, S. 20) has reached the same conclusion from a study of another series of statistics. Pneumonia and pleuritis, he claims, as primary diseases, appear at all points of the earth's surface, and if in certain regions more frequently than in others, yet entirely different from and to a far less degree dependent upon climatic influences, than catarrh and bronchitis, which he elsewhere shows to increase steadily in frequency from the equator to the poles. Juergensen (*Ziemssen's Cyclop. of Med.*, vol. v., p. 13, Amer. Trans.) holds the same opinion as the two authors just quoted; further claiming, however, that the belief that the malady becomes more frequent as we advance from the higher latitudes to the tropics, is also not true; stating "that the statistics we already possess are amply sufficient to establish it. Its importance need hardly be discussed here"—in this summary manner dismissing the subject from further discussion. Fonssagrives (*Dict. Encyclopéd. des Sc. Méd.*, tome xviii., 1876, art. climat.) is the only authority, as far as I am aware, who holds an opinion directly opposed to those of the authors already quoted; yet, as we shall see, his conclusions are reached from a study of the very statistics from which Grisolle derived his conclusions. "The geographical domain of pneumonia," he writes, "offers a distribution, if not completely the reverse of that of hepatitis, at least opposed to it. This malady spares, doubtless, neither climate nor race, but has for certain climatological conditions (formules) a predilection which we here demonstrate. We have, in order to convince ourselves of this, but to read the complete article which Grisolle, applying the important documents furnished by J. Rochard and Le Roy de Mericourt, has written upon the geographic distribution of pneumonia. He shows us that this malady, very rare in the polar climates in spite of the inclemency of its temperature, increases in frequency from 60° north latitude, already presenting itself with a certain amount of vigour in Sweden and Denmark; increasing in Germany; becoming still more frequent in England, where it kills 19,000 to 20,000 persons a year; showing itself with greater frequency in France, where it furnishes 8.5 per cent. of the general mortality; presenting itself with an almost equal intensity in Italy and in Spain, but, leaving here, becoming somewhat rarer as we advance towards the south, constituting in the tropical countries, as I have myself shown, a kind of nosological rarity." I have quoted this author so fully because his conclusions almost exactly coincide with those I have reached. It must be here stated, that at the time that the conclusion, that pneumonia increased in frequency as we pass from high to equatorial latitudes, was arrived at by me, I was totally unaware of Fonssagrives's; hence, the conclusions reached must be considered as independent, although his preceded mine in point of time, and as lending support to each other.

The statistics on which my deductions are based will now be passed in review:—

United States.

States.	Latitude (N.).	Pneu. per 1000 inhabitants.	Pneu. per 1000 deaths.
Minnesota	43° 30'—49°	0.39	55.30
Maine	43 —47° 30'	0.62	51.22
Vermont	42 44'—45°	0.59	55.58
New Hampshire	42 42—45 18'	0.96	62.46
Wisconsin	42 47—47	0.50	54.55
Oregon	42 —46° 18'	0.34	55.76
Michigan	41 42'—48° 22'	0.67	69.74
Massachusetts	41 14—43 53	0.98	59.29
Rhode Island	41 18—42 03	0.78	58.23
Connecticut	41 —42° 03'	0.72	55.96
Iowa	40 36'—43° 30	0.61	75.32
New York	40 29'—45	0.87	60.28
Nebraska	40 —43°	0.93	87.30
Pennsylvania	39 55'—42° 15'	0.58	44.84
New Jersey	38 55'—41 21	0.59	51.61
District of Columbia . .	38 51'	0.98	60.87
Delaware	38 28'—39° 50'	0.68	56.41
Ohio	38 21'—41 58	0.65	60.27
Maryland	37 53'—39 44	0.70	59.59
Indiana	37 46—41 46	0.88	80.66
Colorado	37 —41°	0.48	50.67
Kansas	37 —40°	1.49	112.13
Illinois	36 59—42° 30'	0.96	77.94
Virginia and West Va. . .	36 31—40 40	0.94	75.66
Kentucky	36 30—39 06	0.95	78.49
Missouri	36 —40° 30'	1.41	103.96
Nevada	35 —42	1.18	81.30
Tennessee	35 —36 30'	1.04	84.03
North Carolina	33 49—36 30'	0.80	71.34
Arkansas	33 —36 30	2.98	183.42
California	32 28—42	0.65	46.77
South Carolina	32 04—35° 13'	1.26	102.58
Mississippi	31 52'—35	1.68	127.21
Georgia	30 20'—35	1.17	99.54
Alabama	30 15'—35	1.47	123.81
Louisiana	28 56'—36 30'	1.75	94.15
Texas	25 51'—36 30	1.58	104.43
Florida	24 30'—31	1.39	113.55

Comparing the 19 States lying wholly, or in great part, above the 39th parallel of latitude with the 19 lying below this line, we find an average pneumonia death-rate for the former of 0.69 per 1000 living, or a mortality of 6.1 per cent. for all deaths, and 1.27 per 1000 population, or 9.4 per cent. of the entire mortality for the latter. That is, pneumonia is actually about twice as frequently met with, or about one and a half times as common a cause of death, in the Southern as in the Northern States. Or, constructing a table on another basis so as to show more clearly this latitudinal distribution of the disease, we obtain the following:—

No. of States.	States wholly or in great part between the	Pneu. per 1000 inhabitants.	Pneu. per 1000 deaths.
1	25th and 30th parallels.	1.39	113.55
8	30th and 35th “	1.58	113.31
13	35th and 40th “	0.93	73.14
14	40th and 45th “	0.72	61.85
2	45th and 50th “	0.51	53.26

Showing a marked and undoubted dependence upon latitude. Turning now to European countries. Here my statistics are few, and rather unsatisfactory; the difficulty being that, in most of these States, pneumonia, bronchitis, and pleurisy are returned under one head, thus rendering such data useless for separate consideration. However, as far as they go, the deductions are the same as those for our own country. Thus:—

States, etc.	Latitude (N.)	Countries, etc.		Cities.		No. of cities.	Death-rate.	
		Per 1000 inhab's.	Per 1000 deaths.	Per 1000 inhab's.	Per 1000 deaths.		Cities.	Countries.
Italy,	36°35'–47°	1.85	126.3	2.95	97.6	3	30.2	29.5
Austro-Hungary }	42 –51			2.42	68.9	4	36.1	35.4
France,	42 20–51 05'		85.0	1.90	64.3	6	28.6	24.3
Switzerland	45 48–47 49	1.50	77.8	1.71	73.0	3	24.0	24.0
German Empire, }	47 20–55 50	1.34	60.0	1.54	59.0	19	26.8	27.2
Bavaria,		1.40	47.6	1.02	36.0	2	33.4	28.8
Prussia,		1.05	39.2	1.57	74.7	14	26.2	26.6
Belgium,	49 27–51 30	0.85	45.0	1.74	61.6	2	25.5	19.2
England and Wales }	49 57–55 47	1.03	46.7	1.22	51.5	13	24.1	21.8
Netherlands	50 43–53 33			1.90	74.9	2	26.3	24.4
Ireland	51 26–55 23	0.31	19.3	0.54	17.7	4	28.6	16.1
Denmark	54 30–57 45			1.57	63.7	1	23.9	22.6
Scotland	54 42–58 40	0.73	38.2	1.12	47.4	8	23.5	20.5
Norway }	55 15–71 10	1.60	64.7	1.99	76.0	2	23.6	18.6
& Sweden }								
Feroe Isles	61 20–62 30	0.71	44.9					15.8
Iceland	63 23–66 33	0.79	31.8					25.5

Again showing an almost uninterrupted decrease as we pass northward from Italy to the northernmost countries of Europe; the only marked exception to this rule being the instance of Sweden and Norway.

So much for the various States and countries; let us now turn our attention to the bearing of the statistics derived from the various cities of America and Europe upon the latitudinal relations of pneumonia. A single *résumé* is here presented, since a detailed list of all the cities would occupy too much time and space, without, even, then showing in a sufficiently clear manner these relations.

United States.

Latitude (N.).	Pneu. per 1000 inhab's.	Pneu. per 1000 deaths.	No. of cities.	Latitude (N.).	Pneu. per 1000 inhab's.	Pneu. per 1000 deaths.	No. of cities.
29° to 32°	1.28	51.31	7	29° to 30°	1.27	46.32	3
32 “ 35	2.34	84.36	6	30 “ 35	1.91	72.64	10
35 “ 38	1.32	57.80	10	35 “ 40	1.29	60.41	28
38 “ 41	1.22	60.91	32	40 “ 45	1.07	60.54	64
41 “ 44	1.06	61.11	46	45 “ 46	0.85	29.16	1
44 “ 46	0.89	51.36	5				

Europe.

Latitude (N.).	Pnen. per 1000 inhab's.	Pneu. per 1000 deaths	No. of cities.	Latitude (N.).	Pnen. per 1000 inhab's.	Pnen. per 1000 deaths.	No. of cities.
43° to 46°	2.92	93.49	7	43° to 45°	3.52	114.97	4
46 " 49	1.86	73.28	10	45 " 50	1.93	72.11	15
49 " 52	1.52	57.13	8	50 " 55	1.30	51.44	38
52 " 55	1.18	48.49	22	55 " 60	1.32	54.17	11
55 " 58	1.17	59.21	9				
58 " 60	1.99	76.47	2				

View this question as we may, no matter in what manner we arrange these statistics, still in each and every instance the result is the same. It will be observed that the disease seems to reach its maximum along a certain parallel of latitude in the cases of both America and Europe, this being in the instance of the former apparently the 35th, and as we pass northward towards the colder regions a steady diminution in the mortality from the disease is observed; this rule prevailing with but few exceptions, all other things being equal. Such, we have shown, is true not only of the cities, but of the various countries also. In an earlier portion of this article (see page 83) a table is given showing the average death-rates from pneumonia in the various cities of the world, 190 in all, which I have collected, this point being there shown in a most positive and decided manner.

Finally, I will present without comment the following tables, designed to show at a glance the longitudinal, latitudinal, and temperature relations of pneumonia, as deduced from the statistics of 174 cities. The numbers inclosed in parentheses indicate the number of cities of which the numbers beneath show the average death-rate from pneumonia for each 1000 of population:—

Europe.

10°W.	5°W.	0°	5°E.	10°E.	15°E.	20°E.	25°E.	30°E.	Pnen. per 1000 inhab's. (aver.)	Mean annual temp. F. (aver.)	Latitude.
60°		(8)			(2)	(1)					
55		1.12			1.22	3.11			1.32	47.8°	
	(4)	(13)	(4)	(7)	(9)	(1)					
50	0.54	1.13	1.65	1.56	1.45	1.75			1.39	46.1°	
		(1)	(3)	(7)	(2)	(2)					
45		0.64	2.02	1.93	1.42	2.94			1.93	51.3°	
				(2)	(1)			(1)			
40				3.50	3.33			3.74	3.52	55.0°	
	0.54	1.11	1.81	1.97	1.55	2.68		3.74	Pnen.	Mean	
	52.1°	49.3°	51.6°	50.0°	48.2°	47.0°		49.0°	per 1000 inhab's. (aver.)	annual temp. F. (aver.)	

Longitude W. and E. from Greenwich.

North America.

125°	120°	115°	110°	105°	100°	95°	90°	85°	80°	75°	70°	Pneu. per 1000 inhab's, (aver.)	Mean annual temp. F. (aver.)	Latitude.
50														
45											(1)	0.85	44.6°	
40			(1)	(1)		(1)	(3)	(5)	(7)	(9)	(37)	1.97	48.2	
35	(3)	(1)	2.30	0.71		1.15	0.67	0.82	0.80	1.02	1.18	1.29	55.0	
30	1.21	2.61			(1)		(2)	(6)	(5)	(10)				
		(1)			0.34		1.71	1.24	1.02	1.36				
		0.98				(1)	(2)	(4)	(1)	(1)		1.91	66.2	
25						(1)	(2)							
						0.94	1.43					1.27	69.2	
	1.21	1.80	2.30	0.71	0.34	1.47	1.40	1.26	1.05	1.20	1.17	Pneu. per 1000 inhab's, (aver.)	Mean annual temp. F. (aver.)	
	57.1	57.5	52.0	47.5	49.3	61.9	57.9	56.1	52.1	52.6	48.0			

Longitude W. from Greenwich.

Conclusions.—1st. The relations of pneumonia to altitude are definite and marked; with increase in elevation above the level of the sea, there is a steady diminution in the death-rate of pneumonia. To this rule some exceptions exist, but in the large majority of instances the relation holds good.

2d. The mean annual rain-fall of a place bears no positive relation to pneumonia; in some instances a large mortality from the disease coincides with a large precipitation of rain, in others with a small precipitation, while in as many others the contrary conditions are found to prevail.

3d. The higher the death-rate of a place from all causes, the greater the mortality from pneumonia. This rule is almost, if not actually, absolute.

4th. The larger the actual population of a locality, the greater its relative death-rate from pneumonia; the explanation for this being probably found in the following: Density of population bears an undoubted relation to the pneumonia-rate, increase in the former being followed by, or going hand-in-hand with, increase in the latter.

5th. There is a direct, positive, and unequivocal relation between the mean annual temperature of a place and its death-rate from pneumonia; the rule being that a high mortality from the disease coincides with a high mean annual temperature. Exceptions exist, but, being unusual and rather rare, their existence can hardly be considered to invalidate this rule.

6th. Proximity to large bodies of water, such as lakes, inland seas, or the ocean, exerts no appreciable influence on the pneumonia-rate.

7th. For North America, pneumonia increases in frequency as we pass from east to west; for Europe as we advance from west to east, the rate of increase being very nearly twice as great in the case of the latter as in that of the former.

8th. Pneumonia, all other things being equal, increases in frequency the further we advance from the polar regions towards the tropics; this, however, only up to a certain parallel, beyond which it seems to become less and less commonly met with, until at or near the equator, where it apparently disappears. As far as the latter part of this statement is concerned, such would seem to be the truth, judging by what few facts are at hand. Statistics for the equatorial regions are rare, and, even then, unreliable; hence I have purposely omitted to present them. So few, vague, and indefinite are they as to be almost valueless, allowing only of problematic deductions.

The foregoing conclusions apply more particularly to the Northern Hemisphere, all the statistics I have collected referring to places north of the equator; facts, save in a few instances, relating to places in the Southern Hemisphere being wanting.

ARTICLE VIII.

THE COMPARATIVE ACTION OF SULPHATE OF DATURIA AND OF SULPHATE OF HYOSCYAMIA UPON THE IRIS AND CILIARY MUSCLE.¹ By CHARLES A. OLIVER, M.D., of Philadelphia.

THE same rules² as in previous paper on the Comparative Action of Hydrobromate of Homatropine and of Sulphate of Atropia, have been strictly adhered to.

Observations.—1. The mydriasis of a single instillation of the one-fortieth of a grain of sulphate of datura was consummated in sixteen to eighteen minutes; whilst the mydriasis produced by a single instillation of the one-fortieth of a grain of sulphate of hyoseyamia took place in eight to ten minutes' time.

2. The mydriasis of a single instillation of the one-twentieth of a grain of sulphate of datura occurred in twelve minutes; whilst the mydriasis of a single instillation of the one-twentieth of a grain of sulphate of hyoseyamia took place in eight minutes' time.

¹ Second of a series of articles on the comparative action of the different mydriatics. The first being in the July, 1881, number of this Journal.

² For those who have not seen them, it may be important to repeat. Single instillations of the one-fortieth and the one-twentieth of a grain each, at intervals of one month. Young emmetropes chosen, a few having been previously corrected for H + Ah, in all of whom, the correcting glass and its distance from the eye were calculated for. Care taken to obtain persons of intelligence, and place them under the same conditions in reference to light and time of day. In every case, as soon as accommodation for Sn. 1½ became impossible, a convex lens was placed one-half inch before the eye—this in all instances being taken into account.

3. The utmost loss of accommodation occasioned by a single instillation of the one-fortieth of a grain of sulphate of datura was attained in thirty-six minutes; whilst the utmost intensity of the action of a single instillation of the one-fortieth of a grain of sulphate of hyoscyamia took place in thirty minutes' time.

4. The utmost loss of accommodation occasioned by a single instillation of the one-twentieth of a grain of sulphate of datura was attained in twenty-six minutes; whilst the utmost intensity of the action of a single instillation of the one-twentieth of a grain of sulphate of hyoscyamia took place in twenty minutes' time.

5. The single instillation of the one-fortieth or the one-twentieth of a grain each of both the sulphate of datura and the sulphate of hyoscyamia produced full dilatation of the pupil.

6. Full ciliary paralysis was obtained in nearly every instance by the single instillation of the one-fortieth or the one-twentieth of a grain each, of both the sulphate of datura and the sulphate of hyoscyamia. The intensity of action seeming to depend entirely upon the quality and degree of refraction, being greater in the normal emmetropic eye.

7. The dilatation of the pupil occasioned by the single instillation of the one-fortieth or the one-twentieth of a grain of sulphate of datura, remained *ad maximum* for twenty-four to thirty-six hours; whilst that of equivalent amounts of sulphate of hyoscyamia remained intact for thirty-six to forty-eight hours. The time of the greater amount being longer in both instances.

8. The total ciliary paralysis occasioned by the single instillation of the one-fortieth or the one-twentieth of a grain of sulphate of datura is maintained for twenty-four to thirty-six hours; whilst that of equivalent amounts of sulphate of hyoscyamia is stationary for thirty-six to forty-eight hours. The time of the greater amount being longer in both instances.

9. By accurate observations made many times daily, after the mydriasis and ciliary paralysis of the single instillation of the one-fortieth of a grain of sulphate of datura were established, it was found that the pupil became normal in about fifteen days, and full accommodation returned in nine to ten days' time; whilst with the single instillation of an equivalent amount of sulphate of hyoscyamia, pupillary diameter became normal in about seventeen days, and full accommodation was regained in ten days' time.

10. By accurate observations made many times daily after the mydriasis and ciliary paralysis of the single instillation of the one-twentieth of a grain of sulphate of datura were established, it was found that the diameter of the pupil became normal in about sixteen to seventeen days, and full accommodation was restored in ten days' time; whilst in the mydriasis and ciliary paralysis of the single instillation of the one-twentieth of a grain of sulphate of hyoscyamia, the pupil became normal in seven-

TABLE I.—Comparative action of the one-fourtieth of a grain each.

Explanation.—The numbers under the line A, A' designate the number of minutes after instillation. The numbers from B to A, ciliary power, expressed in dioptres. The numbers from A to E, the horizontal diameter of the pupil in millimetres. The dotted line the action of daturia. The ruled line the action of hyoscyamia. The heavy dots the times of examinations.

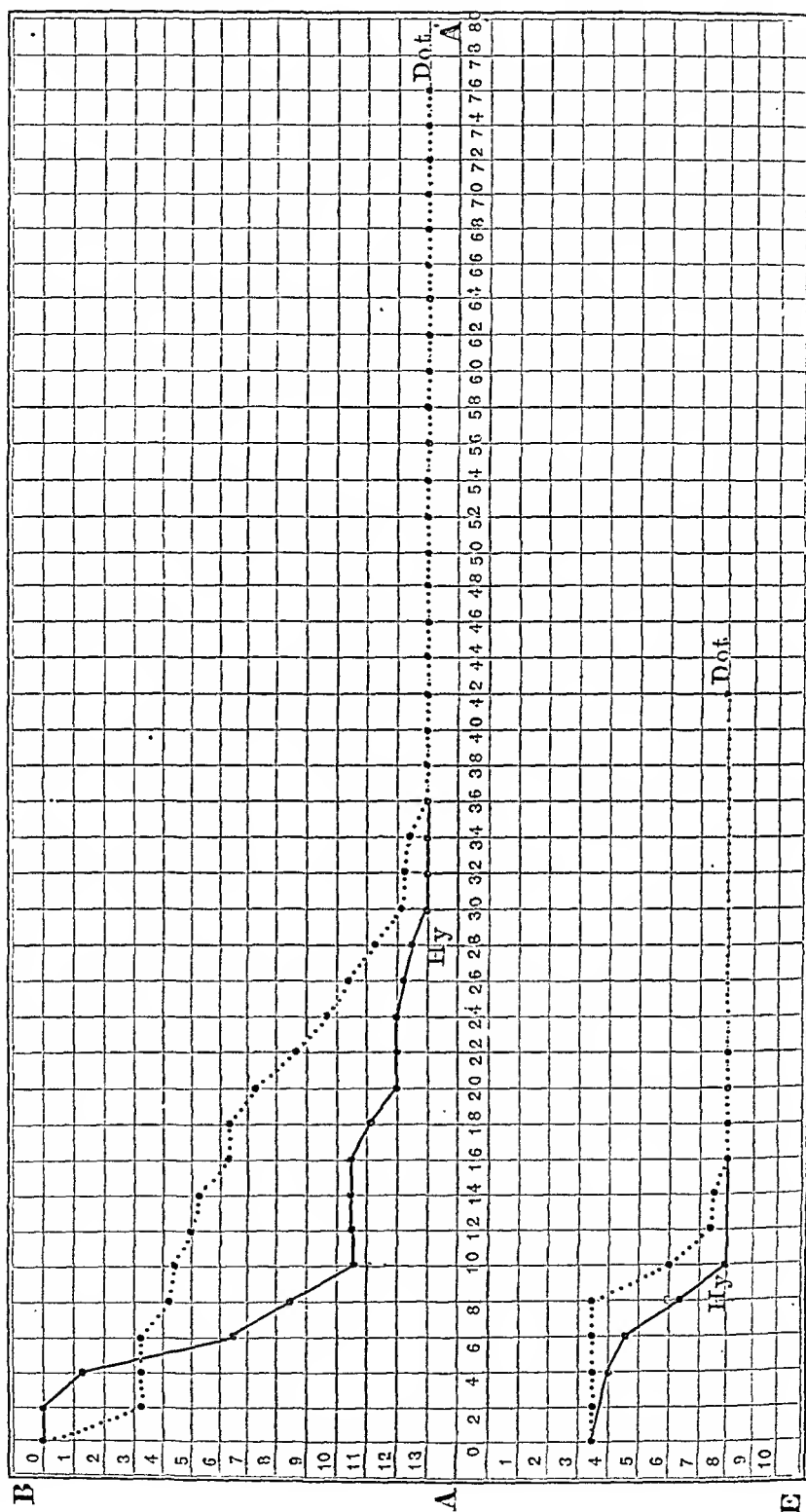
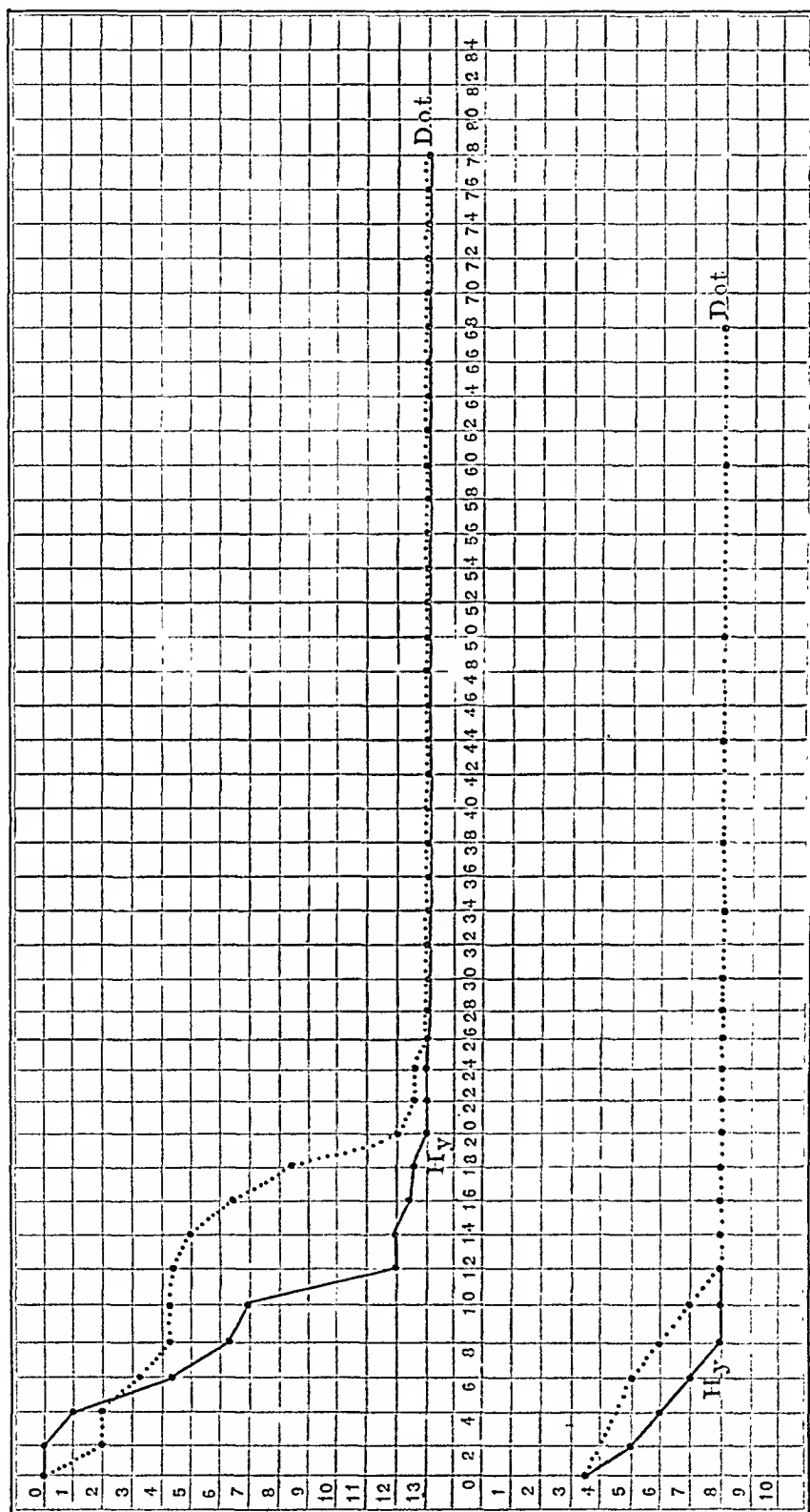


TABLE II.—Comparative action of the one-twentieth of a grain each.



teen days, and full re-establishment of the power of the ciliary muscle occurred in twelve days' time.

During the course of the experiments it was noticed—

1. With both drugs, a marked sense of conjunctival astringency, which in a few instances amounted to actual smarting and pain—this being more pronounced with daturia.¹

2. In a few instances, during the use of the daturia, there was some constitutional disturbance—faucial dryness and bitter taste, accompanied with flushing of the face, headache, and giddiness, but all of such a mild and exceedingly slight character as practically to be of no moment.²

3. In many instances, when the hyoseyamia was used, constitutional disturbance manifested itself by dry throat, flushed face, intense giddiness, wakefulness, followed by profound sleep.³

4. A case of H + Ah, corrected several months previously with the use of sulphate of atropia, chose the same combination, at intervals of one month, with the use of single instillations of the one-twentieth, one-fortieth, one-sixtieth, and the one-eightieth of a grain each of sulphate of daturia.

5. During the correction of several cases of H + Ah, with both the

¹ In every specimen there was acidity, as shown by the litmus test.

² The gravity and character of these symptoms were remarkable in being comparable with those of equivalent amounts of atropia.

³ It may be interesting to note a case of marked susceptibility to this drug. J. S. H., æt. 23 years, a strong, healthy, intelligent woman of firm character, had several times submitted her eyes to my use in these investigations, having had atropia, homatropine, and daturia instilled without the least constitutional effect. On two occasions the one-fortieth and the one-twentieth of a grain each of sulphate of hyoseyamia was instilled. One hour after the instillation of the one-twentieth of a grain, she complained of giddiness and vertigo, with inability to walk—this lasting for more than thirty minutes: saying that her "legs felt weak and head dizzy," during this time not having a particle of headache, although face flushed and temperature increased, accompanied with cardiac palpitation. Pulse 112 to the minute (her average pulse rate being 72 to 76). She had great difficulty in reaching her home, and then went immediately to sleep, awakening in four hours, so hoarse she could hardly speak. Went to bed, remaining awake and restless for six hours, and then fell into a profound sleep.

At the time of the instillation of the one-fortieth of a grain, she again complained (without any knowledge of the similarity of the drug) of faucial dryness, giddiness, wakefulness, followed by deep sleep. I here give an extract from a note mailed to me a few days later: "After instillation, my eyes gave me great inconvenience on account of their dull, heavy, leaden feeling; the dryness of lining membrane of nasal cavities and throat also affected me unpleasantly; had a great desire to sleep, but sleep acknowledged its unwillingness to comfort me, by changing my couch into a floating pillow of what evidently must have been hydrogen gas, so light it appeared. Sometimes this airy balloon-like bed would persist in turning in such a position that my head would drag, and the vain attempt which I made to assume a more comfortable 'pose,' seemed only to aggravate my torture, by straining my back and causing a peculiar feeling in my brain. Released from this misery, I fell into a rock-like sleep, from which it was difficult to arouse me. After arising, my legs were weak and head dizzy."

I await with much curiosity the action of duboisia upon this subject.

drugs, it was noticed that upon the patient's return in twenty-four hours after the primary instillation, full paralysis had occurred during the intervening time, and the correct combination chosen without the use of a second instillation; proving that through strain and irritation, the ciliary muscle had not been paralyzed at the proper time for a normal eye.

6. In many cases of H + Ah, in which latent hypermetropia was high, the astigmatism at a comparatively rare angle, accompanied with much retinal and choroidal disturbance, it was impossible to obtain complete paralysis of the ciliary muscle by single instillations of the amounts given.

7. Unreliability of results, dependent upon miscellaneous selection of drugs. During the first series of these experiments, in which it was found necessary to verify previous calculation in two normal eyes, different results were obtained from specimens obtained from other sources. Reliable articles were gotten, and care taken to prepare fresh solutions, and use new pipettes in every individual case.

Conclusions.—1. A single instillation of either the one-fortieth or the one-twentieth of a grain each of both the sulphate of daturia and the sulphate of hyoseyamia, is sufficient to paralyze accommodation in a normal emmetropic or a healthy ametropic eye.

2. No dependence can be placed upon the action of a single instillation of either the one-fortieth or the one-twentieth of a grain each, of both the sulphate of daturia and the sulphate of hyoseyamia, upon the ciliary muscle of an unhealthy ametropic eye.

3. A single instillation of either the one-fortieth or the one-twentieth of a grain each of both the sulphate of daturia and the sulphate of hyoseyamia, is of no value in the estimation of the degree of refraction in marked cases of asthenopic ametropia; but may be of great service in either verifying previous results or primarily determining errors in healthy ametropic eyes.

4. Maximum dilatation of the pupil is produced by a single instillation of either the one-fortieth or the one-twentieth of a grain each of both the sulphate of daturia and the sulphate of hyoseyamia.

5. The total paralysis¹ of the ciliary muscle, occasioned by a single instillation of either the one-fortieth or the one-twentieth of a grain of sulphate of daturia, is attained later and lost sooner than the total paralysis occasioned by a single instillation of equivalent amounts of sulphate of hyoseyamia.

6. The mydriasis of a single instillation of either the one-fortieth or the one-twentieth of a grain of sulphate of daturia is not so quickly attained,

¹ Complete paralysis is not necessarily meant. The use of the terms "total paralysis" and "full action" are synonymous, and imply the utmost action of the drug, which may be either complete or incomplete.

and is of shorter duration than that of a single instillation of equivalent amounts of sulphate of hyoseyamia.

7. The full action of a single instillation of either the one-fortieth or the one-twentieth of a grain of sulphate of daturia upon the iris and ciliary muscle, remains *intact* for a shorter time than that of a single instillation of equivalent amounts of sulphate of hyoseyamia; the time of the latter being almost double that of the former.

8. With the use of the amounts given of both the drugs, primary calculation of refractive error may be accurately obtained without second instillation, after the lapse of twenty-four hours.

9. The long-continued dilatation of the pupil and the slow return of ciliary power occasioned by the amounts given of both the drugs, render them absolutely useless where we desire accurate ophthalmoscopic examination in cases dependent upon their use.

10. The astringent and irritant action of the two drugs upon the conjunctiva may be avoided by the use of a neutral salt.

11. The comparatively rare and slight transient constitutional effect caused by a single instillation of the amounts given of sulphate of daturia may be considered as perfectly harmless, and of no consequence.¹

12. The grave constitutional disturbance sometimes seen during the use of a single instillation of the amounts given of sulphate of hyoseyamia, should render us cautious in its employment.

PHILADELPHIA, 1507 Locust Street.

ARTICLE IX.

A CASE OF OBSTRUCTION OF THE INFERIOR CANALICULUS OF THE EYE BY DACRYOLITHS. BY HENRY G. CORNWELL, M.D., of Columbus, Ohio, Clinical Lecturer on Ophthalmology and Otology, Starling Medical College, Columbus, Ohio.

J. P., æt. 46, Columbus, Ohio, came under the observation of the writer, March 20, 1882, complaining of an interference with the escape of the tears from the left eye, which had annoyed him for ten years. An examination revealed lachrymal conjunctivitis, the lachrymal punctum slightly everted, its orifice of normal size, and the walls of the canal somewhat thickened. No accumulation of tears in, or any evidence of inflammation of the lachrymal sac. Suspecting a stricture of the canaliculus, this passage was slit up by means of a delicate pair of scissors, one blade of the instrument passing readily through the canal without obstruction. On the following day on attempting to separate the edges of the incision, in order to prevent their union, by means of a Bowman probe held vertical, the instrument struck a gritty substance, which proved to be one of four

¹ During the progress of these experiments, the author has been forcibly struck with the similarity of the behaviour of atropia and daturia.

daeryoliths, which were arranged bead-like along the floor of the canal. The canal itself, after their removal, was found to be much enlarged as a result of this calcareous deposit.

The concretions were blackish-gray, and of irregular, grape-cluster-like form. They were placed in the hands of Mr. Curtis C. Howard, professor of chemistry in Starling Medical College, who subjected the smallest one to chemical analysis. The following is his report :—

“The daeryoliths were found to weigh as follows : .234, .163, .134, .090 grain. The last one contained : organic matter 28.3 per cent., inorganic matter 71.7 per cent. The inorganic matter was found to be chiefly, if not entirely, phosphate of lime ; the small quantity (.09 grain) preventing a complete examination for all acids and bases.”

Such concretions, formed by a deposit of the saline elements of the tears, are very rarely observed.¹ They have been found in the lachrymal gland, on the conjunctival surface of the upper lid,² in the ducts of the Meibomian glands, in the conjunctival *cul-de-sac*, in the lower canaliculus and lachrymal duct. The cause of their formation is not clearly understood. In some instances the deposit is due to a change in the physical properties of the fluid corresponding in character to that which brings about the formation of urinary, salivary, and biliary calculi. In other instances they appear to be due to the calcification of a fungus formation, occurring in connection with a chronic catarrhal inflammation of the lachrymal passages. They are not observed as a result of daeryocystitis, or complete obstructions of the lachrymal duct, due to strictures.—(*Mackenzie and others.*)

181 EAST STATE ST.

ARTICLE X.

AN ANALYTICAL EXAMINATION OF ONE HUNDRED CASES OF EXTIRPATION OF THE KIDNEY ; WITH A TABULAR RECORD ARRANGED CHRONOLOGICALLY. By ROBERT P. HARRIS, A. M., M. D., of Philadelphia.

THREE forms of operating upon the kidney are now designated by acknowledged and distinct titles, between which there should be no mistake either in the subjects of descriptive papers or the indices of journals. *Nephrotomy*, *nephrolithotomy*, and *nephrectomy* are sufficiently clear in

¹ Among 25,740 eye cases treated at the Brooklyn Eye and Ear Hospital during the last thirteen years, 2 cases having daeryoliths were observed (Thirteenth Annual Report of The Brooklyn Eye and Ear Hospital, Jan. 1882).

² Two years ago a case, the patient a girl, came under the writer's care; in which there were found four or five small chalky concretions on the palpebral conjunctiva of one eye, which could only be removed with a knife. They produced effervescence when dropped into dilute mineral acid.

their derivations to explain their own meaning. We have in this article to deal with the last of the three, which is not infrequently preceded by the first or second, in the hope that the removal of the organ may be avoided.

We may also divide the cases of nephrectomy, as shown by the table appended, into *anticipated* and *non-anticipated*. In the early days of the operation, it will be noticed, that the operator was nearly always at fault in his diagnosis, and did not discover the true nature of the abdominal tumour to be removed, until his introduced hand recognized its lumbar attachments. Thus a hydronephrosis was usually taken for an ovarian cyst; and a solid renal tumour for one of the liver or spleen. Where a cyst was tapped, the character of its fluid contents aided to determine its renal origin; but where this was not done, the surgeon was often not aware of the nature of the case, until already engaged in operating upon it.

The advances that have been made in the differential diagnosis of abdominal tumours, and especially through the introduction of *aspiration* by Dienlaffoy, have diminished the proportion of errors, and enabled the operator, by the microscope and chemical tests, to detect the existence of renal cystic fluids; but where solid tumours exist, there will always be more or less uncertainty, unless the character of the urine, early pains experienced, and history of the first detection of the growth, are such as to lead to a correct diagnosis. Unfortunately, the dangers of aspiration, even when capillary, are such that it is often unsafe to use it as a means of early diagnosis, and must be followed as soon as possible by the removal of the cyst under examination. It is far from safe to aspirate even an ovarian cyst a few days before an intended ovariectomy, and from the nature of the growth and its contents, it is much more dangerous to do the same to a hydronephrosis containing urea, and often purulent fluid mixed with the urine.

To the late Gustav Simon, of Heidelberg, must be given the credit of having performed the first *anticipated* nephrectomy, and also for initiating the lumbar method of operating. Fortunately for humanity and the reputation of the operator, his case recovered, for had he failed, he would not only have been censured for attempting to cure a urethral fistula by the removal of a sound kidney; but the future of the operation, as more legitimately demanded, would have been decidedly darkened, and its present reputation achieved at a much later period. As it was, the first years of the operation were very discouraging, compared with the results more recently recorded; for of the first twelve cases, covering a period of as many years, but two recovered.

Although nephrectomy may be said to have legitimately commenced with Simon, his was the fourth operation, two of which were in this country, in which a kidney was extirpated; those preceding him having acted under a misconception of what was required to be done in their

respective cases. After the result of Simon's case became known, great efforts were made to find some historical record of a prior operation conceived and accomplished as his had been; but no evidence has been produced, and he, therefore, stands alone in the honour. It was long known to the medical world, that a human being, or one of the lower animals, might live in health with only one kidney, as shown by autopsies, and the experiments of vivisectors; but it was not until 1869 that this fact was established in the case of a living woman, under the knife of a surgeon.

In the year 1873, twelve years after the first nephrectomy, the tide of results changed for the better, and after a succession of six recoveries the operation came to be regarded with greater favour; and since that time has been more and more abundantly performed in each successive year, until now, of the abdominal operations it is, perhaps, only second in frequency to oöphorectomy, as instituted by Battey, of Georgia, especially in Germany and England. As an operation of interest, it takes rank above that of extirpation of the uterus for cancer, as its cures are in the majority of instances of a more permanent character, the kidney being subject to forms of disease of which malignancy is only an occasional element. To remove a cancerous uterus so as to achieve a favourable result, requires great care and skill on the part of the operator; but the probability of a return of the disease with fatal effect, limits very much the satisfaction of success. It is true that the kidneys are liable to be both attacked with the same disease, and this is especially the case with tuberculosis and calculus; but it is astonishing how frequently calculi are found only on one side, although in all probability formed from the same diathesis in both, but detained only in one by its smaller-sized ureter. The "wandering" or floating kidney, so common among the women of Germany, appears to be a fruitful cause of renal suffering, and has in a number of instances been removed, especially by A. Martin, of Berlin. This condition is found to affect mainly the right kidney of women who have borne children, and has been attributed by some to the pregnant state, and by others to the wearing of tight compressing strings and bands around the waist to secure the clothing. Dr. Oser, of Vienna, is given as authority for the opinion, that one woman in ten who have borne children, among the poor of Austria, has a right movable kidney, which he claims results from the ascent of the uterus loosening its peritoneal attachments. It has been asserted that this condition is congenital, and not acquired; but there is strong ground for the belief that it is due to a gradual elongation of the attachments of the kidney, which possibly may be congenitally relaxed, as a commencement of the prolapsus. A movable kidney may be only a little less fixed than one normally secured, and is not likely to become painful unless it should be gradually drawn into the floating condition, when it may become so by disease, or mechanical obstruction to the escape of urine.

Table of 100 Operations.

No.	Date.	Operator.	Locality.	Sex	Age	Seat of incision.	Diseased condition of the subject operated upon.	Died.	Recovered
1	June 4, 1861	E. B. Woicott	Milwaukee, U. S.	M.	58	Abdomen	Encephaloid kidney. Diagnosed a cyst of the liver.	D.	
2	June 26, 1867	Spiegelberg	Breslau	F.	42	A.	Hydatid cyst of kidney. Diagnosed an ovarian cyst. Removal incomplete.	D.	
3	April, 1868	Peaslee	New York	F.	..	A.	Solid renal tumour. Diagnosed an ovarian growth	D.	
4	April 2, 1869	Simon	Heidelberg	F.	46	Loin	Fistula of ureter produced in an ovaro-hysterectomy; kidney not diseased.	..	R.
5	Nov. 15, 1869	Esmarch	Kiel, Ger.	F.	19	A.	Large cyst of kidney, with pelvic adhesions; diagnosed ovarian.	D.	
6	?	Reported by S. Wells	London	F.	..	A.	Fibro-cystic tumour of uterus, with an adherent normal kidney.	D.	
7	Dec. 1870	Gilmore	Mobile, U. S.	F.	39	L.	Painful movable shrunken fibrous kidney; woman 5 months pregnant, and went to full term.	..	R.
8	Mar. 23, 1871	Von Brüns	Wurtemberg	M.	..	L.	Gunshot wound of kidney converting the organ into a large abscess.	D.	
9	June, 1871	Meadows	London	F.	..	A.	Large cyst of kidney. Diagnosed ovarian.	D.	
10	Aug. 8, 1871	Simon	Heidelberg	F.	30	L.	Small fibrous kidney containing blood-clots. Diagnosis, calculeous pyelitis.	D.	
11	May 14, 1872	Durham	London	F.	43	L.	Painful kidney; organ appeared healthy; nephrotomy had failed to give relief.	D.	
12	May 16, 1872	G. A. Peters	New York	M.	36	L.	Tuberculous kidney. Diagnosis, calculeous pyelitis; other kidney found diseased on autopsy.	D.	
13	Jan. 7, 1873	Brandt	Klausenberg Austria	M.	25	L.	Extrusion of kidney through a knife-wound in the loin.	..	R.
14	Dec. 2, 1873	Campbell	Dundee, Scotland	F.	49	A.	Cyst, involving lower third of kidney; presumed ovarian.	..	R.
15	Apr. 14, 1875	Le Dentu	Paris	M.	42	L.	Hydronephrosis and perinephritic abscess	..	R.
16	1875	Marvaud	Algiers	F.	young	L.	Extrusion of kidney through a wound with a yatagan.	..	R.
17	Dec. 7, 1875	Langeubuch	Berlin	F.	32	L.	Sarcoma of kidney. (?) Organ of a sack-form; not examined microscopically.	..	R.
18	?	Langenbuch	Berlin	M.	20	A.	Painful floating kidney.	..	R.
19	Apr. 20, 1876	Koehler	Bern	F.	35	A.	Sarcomatous floating kidney. Colon and contiguous parts involved. Removal incomplete.	D.	
20	July 4, 1876	Hütter	Greifswald, Germany	F.	4	A.	Sarcoma of left kidney; weight nearly 5 pounds. Presumed a splenic or ovarian growth.	D.	
21	July 18, 1876	Billroth	Vienna	F.	46	A.	Hydronephrosis. Presumed an ovarian cyst.	D.	
22	?	Hamilton	China	M.	..	L.	Extrusion of kidney through a knife-wound.	..	R.
23	Jan. 7, 1877	Jossop	Leeds, Eng.	M.	2½	L.	Encephaloid kidney; died of a return of the disease in nine months.	..	R.
24	Jan. 28, 1877	Heath	London	F.	24	A.	Calculeous hydronephrosis; presumed to be ovarian.	D.	
25	Aug. 6, 1877	Dumreicher	Vienna	M.	33	L.	Sacculated and dilated kidney; diagnosed a calculeous pyelitis.	D.	

No.	Date.	Operator.	Locality.	Sex	Age	Seat of incision.	Diseased condition of the subject operated upon.	Died.	Recovered.
26	Sept. 27, 1877	Kocher	Bern	M.	24	Abd'm	Adeno-sarcoma of kidney.	D.	
27	Feb. 18, 1878	Müller	Oldenburg, Germany	M.	21	Loia	Calculus hydronephrosis	..	R.
28	Mar. 14, 1878	Byford	Chicago, U. S.	F.	39	A.	Encephaloid kidney; 41 pounds.	..	R.
29	Mar. 15, 1878	A. Martin	Berlin	F.	49	A.	Painful floating kidney; found healthy in appearance.	..	R.
30	Aug. 15, 1878	A. Martin	Berlin	F.	30	A.	Painful floating kidney; no appearance of disease	..	R.
31	Nov. 14, 1878	A. Martin	Berlin	F.	25	A.	Painful floating kidney.	..	R.
32	Dec. 9, 1878	A. Martin	Berlin	F.	53	A.	Sarcoma of kidney, 28 oz.	..	R.
33	Jan. 9, 1879	Zweifel	Erlangen	F.	29	L.	Utero-uterine fistula, after labour, with atrophy of the kidney.	..	R.
34	Jan. 19, 1879	Czerny	Heidelberg	M.	59	A.	Malignant tumour of kidney. Aorta ligated to arrest hemorrhage.	D.	
35	April 1, 1879	Billroth	Vienna	F.	35	A.	Retro-peritoneal myo-fibroma with a sound kidney attached. Presumed to be an ovarian cyst.	D.	
36	April, 1879	Urbiniati	Cesena, Italy	F.	56	L.	Calculus pyelitis.	D.	
37	Apr. 19, 1879	A. Martin	Berlin	F.	48	A.	Painful floating kidney.	D.	
38	May 22, 1879	Czorny	Heidelberg	F.	32	L.	Fistula and pyonephritic abscess.	..	R.
39	June 23, 1879	A. W. Smyth	New Orleans U. S.	F.	35	L.	Painful floating kidney.	..	R.
40	June 24, 1879	A. Martin	Berlin	F.	24	A.	Painful floating kidney	D.	
41	July 17, 1879	E. Martin	Hamburg	F.	37	A.	Painful floating kidney.	..	R.
42	Aug. 11, 1879	Lossen	Heidelberg	F.	37	A.	Adeno-sarcoma attached to a sound movable kidney; woman pregnant; aborted in 12 hours.	..	R.
43	Oct. 6, 1879	Czerny	Heidelberg	F.	37	A.	Hydronephrosis.	..	R.
44	Oct. 24, 1879	Morkel	Nürnberg	F.	28	A.	Painful floating kidney, affected with fatty degeneration.	D.	
45	Nov. 4, 1879	Bardenhouer	Cologne	F.	40	L.	Pyonephrosis and fistula.	..	R.
46	Nov. 23, 1879	Bardenhouer	Cologne	F.	22	L.	Pyonephrosis and abscess.	D.	
47	Dec. 23, 1879	A. E. Barker	London	F.	21	A.	Encephaloid floating kidney.	D.	
48	Jan. 3, 1880	Thorntou	London	F.	7	A.	Hydronephrosis of left kidney.	..	R.
49	Jan. 16, 1880	Savago	London	F.	56	A.	Hydrocephrosis.	..	R.
50	Feb. 17, 1880	Lucas	London	M.	36	L.	Pyonephrosis, with lumbar fistula.	..	R.
51	Mar. 9, 1880	Czeray	Heidelberg	M.	23	L.	Hydronephrosis with sarcoma.	D.	
52	Apr. 3, 1880	Czerny	Heidelberg	F.	27	L.	Utero-vaginal fistula of right side; kidney not diseased	..	R.
53	Apr. 21, 1880	Conper	London	F.	29	L.	Saccular and dilated kidney containing fetid pus.	..	R.
54	May 3, 1880	Czerny	Heidelberg	F.	40	A.	Hydronephrosis of right kidney; lived 48 days.	D.	
55	May 15, 1880	Czeray	Heidelberg	F.	23	L.	Calculi in left kidney; pelvis dilated.	..	R.
56	May 19, 1880	Credé	Dresden	F.	26	L.	Utero-uterine fistula.	..	R.
57	May 20, 1880	Le Forto	Paris	M.	23	L.	Lumbar renal fistula. Kidney very slightly altered	D.	
58	May 24, 1880	F. Lango	New York	F.	47	L.	Cystic kidney containing concretions; other kidney found useless on autopsy.	D.	
59	May 29, 1880	Spiegelborg	Breslau	F.	27	A.	Enlarged kidney, not apparently altered in structure. Diagnosed a hydronephrosis.	..	R.
60	May, 1880	Raffa	Novigo, Italy	F.	20	L.	Suppurative nephritis, with purulent infection and tuberculosis. Lived four months.	..	R.
61	June 5, 1880	A. E. Barker	London	F.	32	L.	Calculus pyonephrosis.	D.	
62	June 20, 1880	A. Martin	Berlin	F.	..	A.	Painful floating kidney.	D.	
63	Aug. 2, 1880	Czerny	Heidelberg	F.	11 mo.	A.	Large adenoma of left kidney.	D.	

No.	Date.	Operator.	Locality.	Sex	Age	Seat of incision.	Diseased condition of the subject operated upon.	Died.	Recovered
64	Aug. 19, 1880	J. H. McClelland	Pittsburg, U. S.	F.	20	Loin	Calculus pyo-hydronephrosis, with fistula in lumbar and inguinal regions.	..	R.
65	Oct. 3, 1880	Bardenheuer	Cologne	F.	48	L.	Cancer of ureters, involving the left ureter.	D.	
66	Oct. 5, 1880	A. E. Barker	London	F.	38	L.	Calculus pyonephrosis.	D.	
67	Nov. 28, 1880	A. Martin	Berlin	F.	..	Abd'm	Painful floating kidney.	..	R.
68	1880	Langenbuch	Berlin	F.	30	A.	Painful floating kidney.	..	R.
69	?	Bardenheuer	Cologne	..	5	L.	Pyonephrosis.	..	R.
70	Jan. 10, 1881	Czerny	Heidelberg	F.	35	L.	Pyonephrosis of right kidney.	..	R.
71	Jan. 30, 1881	Clementi	Catania, Italy	F.	28	L.	Pyonephrosis of left kidney.	..	R.
72	Feb. 22, 1881	W. M. Baker	London	F.	7	L.	Tuberculosis of kidney, 2 1/2 oz.	..	R.
73	Feb. 22, 1881	Stockwell	Bath, Eng.	M.	54	L.	Sacculated and enlarged kidney, 10 oz.	D.	
74	Apr. 23, 1881	Czerny	Heidelberg	M.	51	L.	Angio-sarcoma of left kidney.	..	R.
75	?	Barwell	London	F.	16	L.	Pyonephrosis.	D.	
76	May 5, 1881	Barwell	London	M.	18	L.	Calculus pyelitis and retroperitoneal abscess.	..	R.
77	May 7, 1881	Czerny	Heidelberg	F.	45	A.	Sarcoma of lower part of left kidney.	D.	
78	?	Bardenheuer	Cologne	..	..	L.	Hæmaturia and renal colic.	..	(?) ¹
79	?	Bardenheuer	Cologne	M.	20	L.	Renal calculus and pyonephritic abscess.	..	(?) ¹
80	?	Bardenheuer	Cologne	M.	26	L.	Sarcoma of kidney.	..	(?) ¹
81	June 17, 1881	Czerny	Heidelberg	M.	52	L.	Calculus hydronephrosis.	D.	
82	July 14, 1881	Godlee	London	F.	57	A.	Calculus pyelitis.	D.	
83	July 24, 1881	Rosenbach	Göttingen	M.	42	A.	Calculus pyelitis.	..	R.
84	July 25, 1881	Czerny	Heidelberg	M.	40	L.	Sarcoma of left kidney.	..	(?) ¹
85	Aug. 2, 1881	F. A. Kehrer	Heidelberg	F.	32	A.	Hydronephrosis.	..	R.
86	Aug. 3, 1881	Starck	Danzig	F.	42	L.	Wound of ureter in removing cancer of the ureters; nephrectomy 6 days later.	..	R.
87	Sept. 5, 1881	Whitehead	Manchester	M.	46	A.	Solid tumour of left kidney 1 lb. 4 oz.	D.	
88	Sept. 10, 1881	Hicquet	Liege, Belg.	F.	6	A.	Sarcoma of kidney.	..	R.
89	Oct. 15, 1881	T. G. Thomas	New York	F.	21	A.	Fibro-cyst involving kidney.	..	R.
90	Oct. 23, 1881	G. Lepold	Leipzig	F.	23	A.	Blood-cyst of lower part of left kidney.	..	R.
91	Nov. 1881	Frattina	Ponderone, I.	F.	28	L.	Pyonephrosis of left kidney.	D.	
92	Nov. 1881	O. O. Burgess	San Francisco	M.	53	A.	Large cystic tumour of kidney.	D.	
93	Dec. 1881	H. Marsh	London	M.	35	L.	Cystic kidney. Removal incomplete. Other kidney found sound, on autopsy.	D.	
94	?	Lücke	Germany	M.	60	..	Carcinoma of kidney; other kidney contracted and cystic.	D.	
95	?	Baum	Danzig	F.	..	..	Hydronephrosis of left kidney.	D.	
96	?	Goldlog Bird	London	M.	55	L.	Tuberculosis of kidney.	D.	
97	?	Heywood Smith	London	..	..	A.	Hydronephrosis.	(?)	
98	Mar. 10, 1882	James Adams	London	M.	..	L.	Medullary sarcoma with hæmaturia, pre-umed a calculus pyelitis.	(?)	
99	Mar. 11, 1882	Thornton	London	F.	..	A.	Pyonephrosis of right kidney.	..	R.
100	Mar. 15, 1882	Thornton	London	..	..	A.	Cystic, suppurating kidney, 4 lbs. 7 oz.	..	R.

¹ These have generally been credited in the column of recoveries, although I cannot find any record to that effect.

Causes of Death in 45 Cases.

No.	Operator.	Cause of death.	No.	Operator.	Cause of death.
1	Wolecott	Exhaustion in 15 days from profuse purulent discharge	54	Czerny	Pyæmia without peritonitis; abscesses in parotid, over the sacrum, and in the lungs; died in 45 days.
2	Spiegelberg	? in 26 hours.			Parotitis in 2d week.
3	Peaslee	Peritonitis, in 50 hours	57	Le Fort	Pain and vomiting in 50 hrs.
5	Esmarch	Infarction of lungs in 36 hrs.	58	Laugo	Anuria; both kidneys diseased.
6	Per S. Wells	? on the 3d day.	61	Barker	Shock in 3 hours.
8	Von Brüns	Shock, in 10 hours; other kidney diseased.	62	Martin	Chronic peritonitis, in 6 weeks.
9	Meadows	Hæmorrhage from the pedicle, on the 6th day.	63	Czorny	Septic peritonitis, in 3 days.
10	Simon	Pyæmia, in 31 days; appeared the 21st day.	65	Bardenheuer	Collapse, on 2d day.
11	Durham	? on the 7th day.	66	Barker	Shock, in 12 hours.
12	Peters	Exhaustion, in 65 hours; no peritonitis or uræmia.	73	Stockwell	Secondary hæmorrhage, 10 hours after operation.
19	Kocher	Peritonitis on the 3d day.	75	Barwell	Uræmia, on the 5th day.
20	Hüter	Hæmorrhage, under the operation, from the renal vessels.	77	Czerny	Hæmorrhage from renal vein
21	Billroth	Peritonitis, on the 2d day.	81	Czerny	Anuria, in 37 hours; other kidney atrophied.
24	Heath	Peritonitis, on the 6th day.	82	Godlee	Shock and anuria in 24 hrs.; other kidney healthy.
25	Dumrolier	Collapse, next day; chest opened in resection of rib.	87	Whitehead	Shock, exhaustion, and slight peritonitis on 4th day.
26	Kocher	Septic peritonitis, on 3d day.	91	Frattina	Constant vomiting, from 23d to 31st day.
34	Czerny	Shock, after hæmorrhage, in 10 hours.	92	Burgess	Shock, in 30 hours.
35	Billroth	Septic peritonitis, in 5 days.	93	Marsh	Anuria in 30 hours; other kidney of healthy appearance.
36	Urbinauti	Peritonitis on the 3d day.	94	Lücke	Uræmia in 4 days; other kidney contracted and cystic.
37	Martin	Peritonitis, in 3 days.	95	Baum	Peritonitis in 2 days.
40	Martin	Septic peritonitis.	100	G. Bird	Collapse.
41	Merkel	Uræmia, in 5 days.			
45	Bardenheuer	Septicæmia, in 10 days.			
47	Barker	Pulmonary embolism in 45 hours.			
61	Czerny	Collapse, in half an hour.			

N. B.—The numbers correspond with those of the cases in the preceding table.

Of floating kidneys there have been 16 removed by nephrectomy, with 10 recoveries. Of the 6 fatal cases, 1 was affected with sarcoma of the removed organ, 1 with encephaloid, and 1 with fatty degeneration. There was malignancy in but one of the recovered cases. Martin, of Berlin, performed one-half of the operations, saving 5 of the 8 cases. Fifteen of the subjects were women and 1 was a man, who was of the 10 saved. Two operations were by the lumbar incision, both saved; and 14 by the abdominal, 8 saved.

In 18 cases the kidney was either affected with malignant disease (17), or intimately adherent to a growth of this nature (1). These are recorded as *encephaloid*, 4; *sarcoma*, 10; *angio-sarcoma*, 2; *carcinoma*, 1; and simply *malignant*, 1. Of these cases 9 are reported as having died, and 6 recovered; the other three were under treatment when last heard from.

Of other prominent diseased conditions calling for the operation we find the following, viz.: Large cysts of the kidney, 4 died, 1 recovered; hydronephroses, 4 died, 4 recovered; calculous hydronephroses, 2 died, and 2 recovered; hydronephrosis with sarcoma, 1 died; pyonephrosis, 3 died, and 6 recovered; calculous pyonephrosis, 2 died; calculous pyelitis, 3

died, and 1 recovered; uretral fistulæ, 1 died, and 6 recovered; and tuberculosis, 2 died, and 2 recovered.

In 96 cases in which the site of incision is recorded, we find 46 abdominal and 50 lumbar operations. Of the former, 23 died, and 23 recovered; and of the latter 19 died, 27 recovered, and 4 are yet to hear from.

Of 62 women operated upon, 28 died, and 34 recovered; of 27 men, 14 died, 9 recovered, and 4 are still to hear from; and of 8 children, 3 died, and 5 recovered.

Of the 100 cases operated upon, 45 have died, 49 have recovered, and 6 were still under treatment when last heard from; these last include cases 78, 79, 80, and 84 of the record of 1881, as given by Prof. Czerny, of Heidelberg, before the International Medical Congress in London. From this record of Czerny, and the more recent one of Mariotti, of Italy, must be excluded the operation credited to "*Mynter*," whose nationality is not given. Upon tracing up this matter by correspondence, I find that the case is one of nephrotomy, and belongs to the well-known surgeon of Buffalo, Dr. Herman Mynter. It was his intention to have removed the kidney, but this was found impracticable by reason of intimate connections with the surrounding parts. After the woman's death, which was from pneumonia on the twentieth day, the kidney was found densely adherent, not only to the tissues around, but to have formed adhesions with the colon and pancreas. The case was one of calculus of the kidney, which produced a pyelitis, a pyelo-nephritis, abscess of the kidney, and perinephritis with adhesions. After death a large abscess was found in the top of the gland.

The one hundred operations are credited to the different countries in which they have been performed, as follows, viz.: to Germany, 50—28 recoveries, 18 deaths, and 4 to hear from as to the final result; England, 24—9 recoveries, 13 deaths, and 2 recent cases to hear from; United States, 10—5 recoveries, and 5 deaths; Austria, 4 deaths; Italy, 2 recoveries, and 2 deaths; Switzerland, 2 deaths; France, 1 recovery, and 1 death; Belgium, 1 recovery; Scotland, 1 recovery; Algiers, 1 recovery, under a French surgeon; and China, 1 recovery under an American. Of these, London has the credit of 21 operations; Heidelberg, 17; Berlin, 11; and Cologne, 7; which collectively (56), is probably about one-half of the cases up to the present time.

Nephrectomy may be safely claimed to save at least one-half of the cases operated upon. The statistics show a higher rate of cure than this; but we must make allowance for unreported cases, of which it is probable there are very few, except what belong to the past year. It has been satisfactorily demonstrated, that a woman or man may spare one kidney without impairment of health, provided the one left is perfectly sound; it has also been shown that life may be materially prolonged after the extirpation of a cancerous or other malignant degeneration of a kidney, if alone affected; and it has been proved, that tuberculosis of one kidney is apt to

be followed sooner or later by the same disease in the other. The true value of the operation can only be estimated when we have a record of the subsequent health of the patients, and time, cause, and manner of death.

The relative value and safety of the abdominal and lumbar methods of operating, cannot be ascertained from their respective results, as shown in the table. Theoretically, the lumbar incision ought to be the safer, but much will depend upon the character of the case to be operated upon, and practicability often decides the question in favour of the abdominal incision. Where the kidney is but slightly enlarged, the costo-iliac space sufficient, and the gland moderately adherent, there can be no question that the lumbar method is safer and preferable; but in a large proportion of cases the abdominal section is the easier and safer of the two, by reason of the size and character of the tumour, and the difficulties to be overcome in ligating its bloodvessels. Believing that the post-peritoneal method is only theoretically safer, Dr. Knowsley Thornton, after the direction of Langenbuch, advocates the abdominal incision in almost all cases; making his opening in the *linea semilunaris*, on the side corresponding to the kidney to be removed. He believes that this method is the truly scientific one for nephrectomies in general, and offers great advantages in ligating the bloodvessels and turning out the diseased kidney, thus avoiding the dangers of hemorrhage.

The causes of death may be enumerated as follows, viz. :—

Peritonitis	8	Secondary do.	1	Collapse	4
Septic peritonitis	4	Uræmia	6	Exhaustion	2
Septicæmia	1	Pulmonary embolus	2	Excessive vomiting	2
Pyæmia	2	Shock	7	Not stated	3
Hæmorrhage	3				

Special Cases.—No. 7 was the first operation, in my tabular record, in which a diseased kidney was removed, under a correct diagnosis, and with a favourable result. The woman had been long suffering with a painful floating kidney, and an attempt had been made by another operator to excite adhesive inflammation by means of a seton, and thus fix the kidney in contact with the abdominal wall. But the tape cut its way out of the kidney, leaving a cicatrix two inches long, and set it once more at liberty. This case was also one of two, in which the operation was undertaken during pregnancy, and without exciting abortion. In the other case (42) abortion followed in twelve hours.

Cases 13, 16, and 22 were all instances of protrusion of the kidney through incised wounds of the loin; in an Austrian, an Algerine woman, and a Chinaman. From the repetition of this peculiar injury within quite a limited period, we are led to infer that such wounds have not been uncommon in past ages. From the report of the case of the Chinaman we may also infer, that such injuries were capable of spontaneous cure, the vessels of the kidney being closed by the cicatrization of the lumbar wound, and the pedicle cut off by strangulation and death.

Case 64 presented the rare complication of two fistulæ, a primary one in the loin, and a secondary one in the groin, on the left side. Pain in the corresponding kidney had existed twelve years at intervals, or from the age of 8. The lumbar sinus formed four years before the operation, and gave exit to a calculus four months later; and a week before the operation a second abscess pointed in the groin, was opened, and established a second fistula, giving exit to pus and urine. The excretory function of the kidney continuing in activity, the offensive state of the woman can well be imagined, and the immediate relief appreciated. The measure of urine voided by the urethra soon doubled.

Case 90 is unique in the history of nephrectomies; as a large cyst involving the lower part of the kidney and pendent from it was found to contain blood, the origin of which could not be accounted for, as there was no aneurism or open vessel.

From the record of cases given, and their numerous mishaps, it is evident that the operation of nephrectomy is still upon trial, both as to the best method of performance, and the diseased conditions indicating the excision. With regard to some of the diseases of the kidney, we may say without hesitation, that the operation is demanded, and promises well, both as to the prospect of recovery, and the permanence of relief obtained. But there are other conditions, in which operations have been performed, under circumstances of very doubtful utility. We are not prepared by evidence of final results, to recommend the operation in cases of renal sarcoma of children, where at best the temporary relief is but a poor return for the risk, suffering, and perhaps parental anxiety in the case. The same opinion in a modified form will hold good with regard to tuberculosis, which if primary in one kidney, is not likely to remain long confined to it, or to be eradicated by its removal. Of four cases, two recovered, and one of these survived four months; the fate of the last one, a girl of seven years of age, will be of some interest. She was operated upon fifteen months ago. In cancerous and serofulous subjects there is but little hope of being able to prolong life beyond a limited period. In hydronephrosis; pyonephrosis; calculous pyelitis, with or without fistula; and painful floating kidney, there may be entertained strong hopes of final success.

In my tabular record I have added 27 cases, to that of Prof. Czerny, prepared ten months ago; his last operation bearing the date of July 25, 1881. As this in my record is case 84, he was eleven short of the full list, and I presume I must be fully that now. I have also added 22 to the record of Mariotti, whose paper appeared in *Lo Sperimentale* of February and March, 1881. When Credé published his own operation, he numbered it the 42d; but it will now be seen that it was, at the lowest, the 56th. For these reasons I have not given my record as "*the first hundred*," as this will not be reliably ascertained for a year yet.

ARTICLE XI.

VALUE OF CARDIO-SPHYGMOGRAPHY FOR THE DETERMINATION OF CARDIAC VALVULAR CONDITIONS AND OF ANEURISM, PARTICULARLY FOR EXAMINERS IN LIFE INSURANCE. By A. B. ISHAM, M.D., of Cincinnati, Ohio.

THE graphic method in diseases of the circulatory apparatus has, within the past few years, made such positive additions to our means of arriving at certain conclusions in regard to valvular affections of the heart and calibre changes in the principal arterial vessels, that no physician, who has to deal with such conditions, should content himself to rest in ignorance of the method and its results. It is of particular importance that examiners in life insurance should know what cardio-sphygmography has accomplished, and should be competent to avail themselves of the advantages which it offers in clearing up doubtful cardiac physical signs. They occupy a position of peculiar responsibility, both toward the company by which they are engaged and toward the general public. It is their duty to the former to recommend only clean risks, about which there hangs nothing to stand in relation to a future fatal disease. Therefore, in a person presenting with cardiac murmur, they cannot upon physical signs, and objective signs, and applicant's history, predicate a positive opinion that an existing murmur is purely functional without significance as regards the structural integrity of the organ, and it is manifestly obligatory upon them to class the risk as doubtful. In doing this, while the company may be deprived of some good risks, compensation is probably more than established by a preponderance of what might have proved bad risks. It might seem here that the balance is in favour of the company, and the obligation toward it fulfilled; but the balance is not in favour of the company, and the obligation is not fulfilled if there exists any possible way of separating the good from the bad. On the other hand, duty to the public demands that none who come within the limits of application physically sound, desiring the benefits of life insurance, should be excluded. If, then, a perfectly healthy applicant is rejected by reason of a sound, pertaining simply to some mechanical factor, standing in no sort of relation to a pathological process, but which appertaining to another individual would be indicative of grave alterations of vital structures, he suffers an injustice for which the medical examiner is not blameless if there be any way of discriminating as to the nature of the murmur in the one case or the other. The applicant and his assigns are injured in that they are deprived of the benefits which life insurance, in its various forms, affords, and to which they should be entitled.

It is the object of this paper to present in a plain practical light what assistance cardio-sphygmography has proved capable of rendering toward the elucidation of the dubious elements in the order of occurrences we have

referred to. By the term *cardio-sphygmography*, of course is meant the simultaneous tracing of the heart and some one of the arteries, one trace above the other, upon the same receiving slide or tablet, together with a time trace below, in seconds or fractions, so that differences in time between the two traces may be easily and accurately computed. The difference in time between the contraction of the ventricles of the heart and the impulse in an artery—or the time difference between two portions of the same artery, or an arterial trunk and one of its branches—forms the basis upon which the deductions from sphygmographic tracings are principally made. Hence it may be seen that instruments which are capable of registering only a single trace, and have no chronographic attachment, have little clinical or physiological value. To be able to draw correct inferences respecting the double registry in any particular case, we must know what are the normal time differences between the heart and the various arteries which permit of investigation. These have been very closely determined by Dr. A. T. Keyt, by means of his compound sphygmograph, as follows: with a heart beating at the rate of 72 pulsations per minute.

The average time difference between the contraction of the ventricle and the pulsation in the carotid artery is about .0833 of a second = to $\frac{1}{12}$ of a second.

The average time difference between the heart and the temporal artery in front of the external auditory meatus is about .100 second, or $\frac{1}{10}$ second.

Between the heart and the subclavian artery, above the clavicle, about .077 second = to $\frac{1}{13}$ second.

Between the heart and the radial artery about .1538 second = to $\frac{1}{6.5}$ second.

Between the heart and the femoral artery about .1428 = to $\frac{1}{7}$ second.

Between the heart and the dorsalis pedis artery about .216 = to $\frac{1}{5}$ second.

The cardio-carotid time difference is approximately one-tenth the duration of the pulsation. Thus, if the pulse-rate is 60 per minute, the pulsation is one second long, and the normal time difference would be $\frac{1}{10}$ of a second; if the pulse-rate is 72, the pulsation has a duration of $\frac{60}{72} = \text{to } \frac{5}{6}$ of a second, and the normal time-difference between the heart and carotid artery would be $\frac{1}{10}$ of $\frac{5}{6}$, which equals $\frac{1}{12}$ of a second. This ratio of difference to duration of pulsation holds between 60 and 120 beats per minute, but beyond these limits there is no certainty that it obtains.

The carotid artery is commonly selected in making comparisons of time difference, because it is nearest the heart of any artery readily accessible for observation, and in points involving the integrity of the central organ, or the ascending or transverse portions of the aorta, it must necessarily furnish the least equivocal sphygmographic data.

Variations in the normal time interval are produced by aneurism, heavy aortic valves, aortic regurgitation, mitral regurgitation, and rigid arteries.

INCREASING TIME-INTERVAL.

Aneurism.
Heavy aortic valves.
Mitral regurgitation.

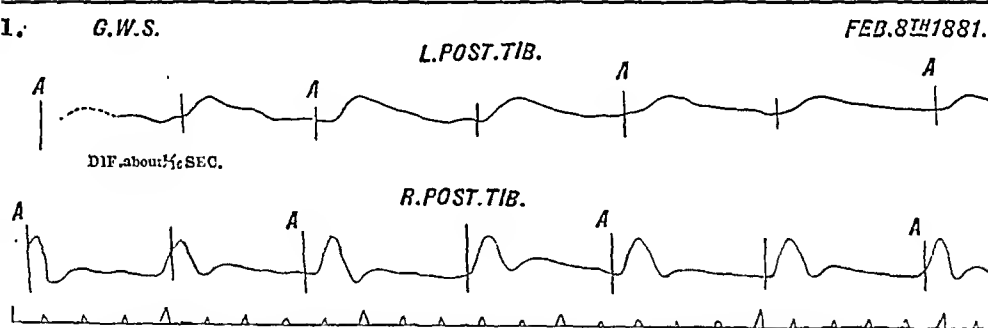
DECREASING TIME-INTERVAL.

Aortic regurgitation.
Rigid arteries.

INCREASING THE CARDIO-ARTERIAL TIME-DIFFERENCE OR INTERVAL. *Aneurism.*—It has been demonstrated by M. Francois Franck¹ and Dr. Keyt² that aneurism retards the transmission of the arterial wave between the heart and the vessels beyond the aneurism, which receive their blood-supply through it. However, according to the clinical observations of Dr. Keyt,³ aneurism, to cause pulse delay, must have “free communications, large cavity, and yielding walls,” while one with converse characteristics, “narrow orifice or small cavity, or resisting walls, may show no abnormal retardation. Deformation of the pulse has no value in the sphygmographic consideration of aneurism, indicating only “arterial obstruction which may originate from other conditions as well as aneurism.”

Fig. 1 supplies the tracings in a case of aneurism of left popliteal artery, showing the delay typical of the aneurismal condition.

Fig. 1.



Time-difference between posterior tibials about $\frac{1}{10}$ second. Normally there should be no difference in time.

Heavy Aortic Valves.—That heavy aortic valves induce abnormal pulse delay has been shown by Dr. Keyt.⁴ The influence of these factors upon the time-difference is well shown by the accompanying graphic delineation, Fig. 2, together with the more salient post-mortem features of the case from which it was obtained.

I made the *post-mortem* examination, assisted by Drs. Keyt and Lowry, April 9, 1881. Left ventricle hypertrophied, left auricle normal, right auricle and ventricle dilated and hypertrophied; mitral, tricuspid, and pulmonary valve normal. Aortic valves had deposited upon their upper

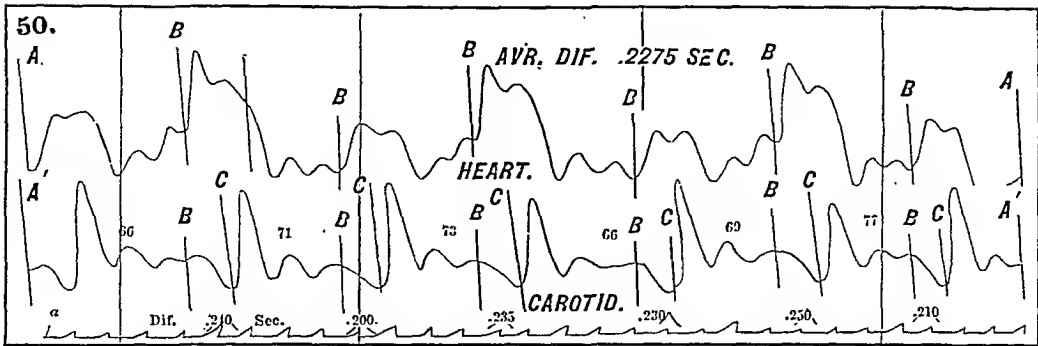
¹ Journal de l'Anat. de la Physiol., t. xv. (Mars-April, 1879).

² Boston Med. and Surg. Journal, Sept. 30, 1880.

³ N. Y. Med. Record, Nov. 29, 1879.

⁴ Med. Record, June 4, 1881.

Fig. 2.

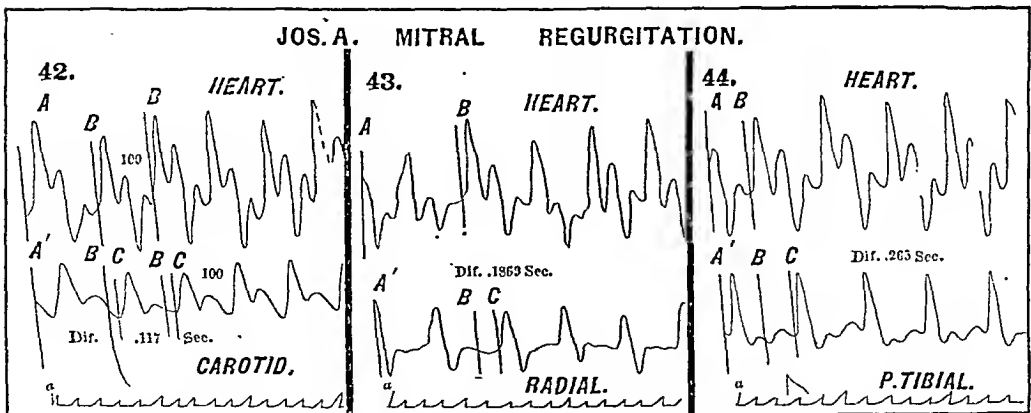


Average time-difference in Fig. 2, .2275 second = to $\frac{1}{4}$ second. Normal time-difference $\frac{1}{12}$ second.

surfaces enormous masses of rough calcareous matter. The overlapping borders of two segments, in nearly half their extent were united, forming a rigid septum, and leaving a triangular space into which fitted the third segment. This segment was pliable, and though it contained a calcareous deposit, measuring three-eighths of an inch in its thickest part, it performed the office of opening and closing the orifice, and did not permit of regurgitation. When closed, the segment overlapped by a little the rigid border of the opening, but slight pressure would cause it to sink below the rim, where it remained, as if locked, until commensurate pressure was applied in the opposite direction.

Mitral Regurgitation.—The cardio-sphygmographic researches of Dr. Keyt¹ have revealed a notable pulse delay from mitral regurgitation. Fig. 3 is in illustration.

Fig. 3.



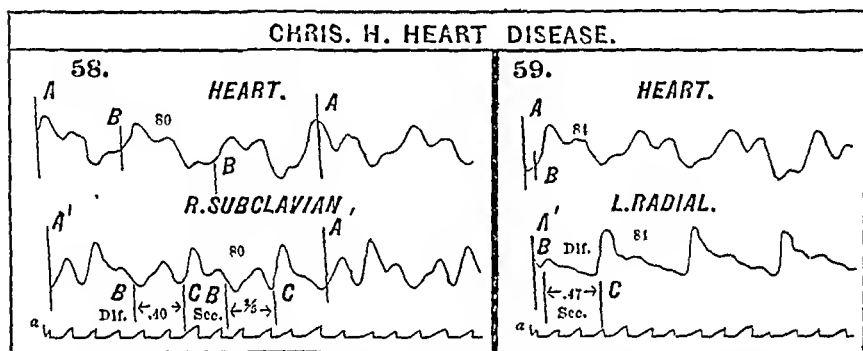
Cardio-carotid time-difference .117 second or between the $\frac{1}{8}$ and $\frac{1}{9}$ second. The normal time-difference with pulse at 100, as in this case, should be $\frac{1}{17}$ second.

¹ Cin. Lancet and Clinic, March 29, and April 19, 1879, and N. Y. Med. Record, Feb. 14, 1880.

The *post-mortem* examination of the subject furnishing the above tracings, as conducted by myself, assisted by Drs. Keyt and Meeum, showed cardiac hypertrophy, normal aortic, tricuspid, and pulmonic valves, while the segments of the mitral valves were thick and leathery, with a thick layer of firm vegetations upon the auricular surface of the larger segment; the auriculo-ventricular orifice guarded by this valve was dilated, and permitted of free regurgitation.

Either of the three agencies already mentioned, operating singly, occasion plainly discernible retardation of the pulse, but when they are combined the delay becomes very marked. An example of all three factors, acting together, may be viewed in the tracings exhibited by Fig. 4.

Fig. 4.



Cardio-subclavian time-difference, .40 = $\frac{2}{5}$ sec. Normal time-difference $\frac{1}{15}$ sec.

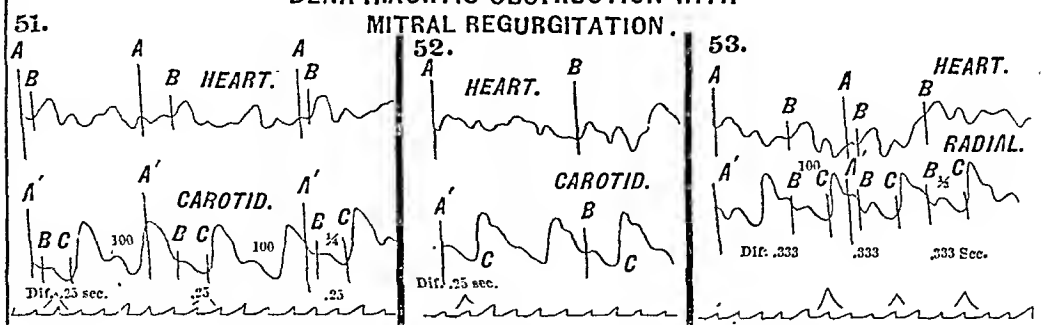
The subject from whom these tracings were obtained died November 16, 1879. From the post-mortem notes at the Cincinnati Hospital was gleaned the following: Heart fatty, weight 15 ounces; just above the aortic valves were two aneurismal pouches, one projecting forward and to the right, the other forward and to the left. The first contained no clots, the other was filled with laminated fibrin, was the size of a small apple, pushed its way in various directions, and pressed upon the pulmonary artery in such a manner as to occlude this vessel entirely. The aortic valves were much *thickened*, but competent by the hydrostatic test. The mitral valve was filled with nodular vegetations and incompetent. Tricuspid and pulmonary valves were normal.

The next cardio-sphygmograms, Fig. 5, instance the pulse delay arising from a combination of heavy aortic valves and mitral regurgitation:—

The person supplying tracings Fig. 5 died in the Cincinnati Hospital February 23, 1879. The autopsy showed the aortic valves to be the seat of extraordinary vegetations, not permitting regurgitation, but so heavy as to require material augmentation of the ventricular pressure to

Fig. 5.

DENA H. AORTIC OBSTRUCTION WITH MITRAL REGURGITATION.



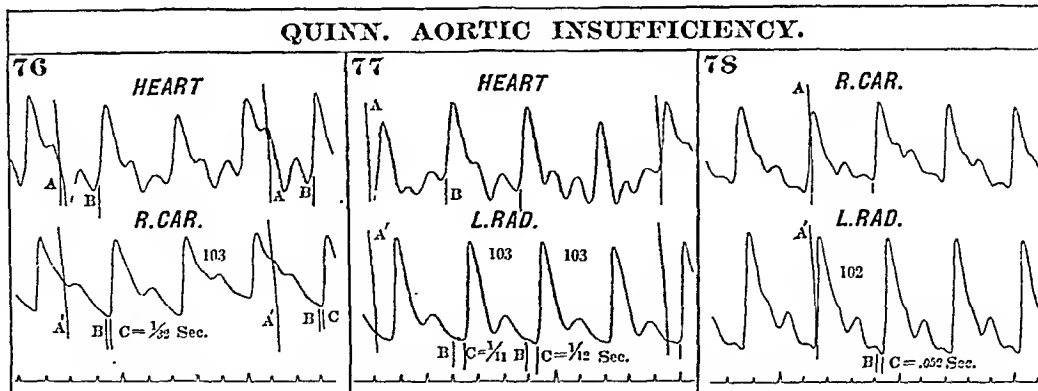
Cardio-carotid time-difference, $.25 = \frac{1}{4}$ sec. Normal time-difference $\frac{1}{5}$ sec.

force them open. The segments of the mitral valve were thickened, rigid, and manifestly incompetent.

DECREASING THE CARDIO-ARTERIAL TIME-DIFFERENCE OR INTERVAL: *Aortic Regurgitation*.—To M. Francois Franck¹ and Dr. Key² we owe the knowledge we possess of the influence of aortic insufficiency upon the transmission of the arterial pulse wave. By the graphic method these investigators have been enabled to ascertain a decrease in the cardio-arterial time-difference as the effect of aortic regurgitation. Cardio-sphygmograms, Fig. 6, are illustrative.

Fig. 6.

QUINN. AORTIC INSUFFICIENCY.



Cardio-carotid time-difference $\frac{1}{3}$ sec. Normal time-difference at 103 about $\frac{1}{5}$ sec.

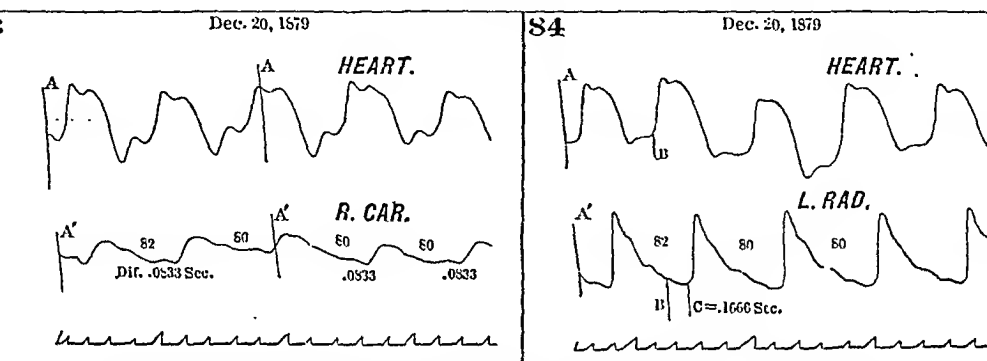
The case from which were derived the above tracings was in the Cincinnati Hospital, service of Dr. C. G. Comegys. All the usual physical

¹ Op. cit.

² Op. cit.

signs of free aortic regurgitation were present. As yet no opportunity has been met with to verify pure aortic insufficiency post-mortem. But where the demonstration is so complete that aneurism of sufficient degree causes pulse delay, graphic tracings in which this condition figures with aortic regurgitation, become available in determining the influence of the latter upon the arterial wave transmissions. Such a combination is marked by tracings Fig. 7:—

Fig. 7.



Cardio-carotid time-difference .0533 = $\frac{1}{12}$ sec. Normal time-difference .0533 = $\frac{1}{12}$ sec.

Tracings Fig. 7 are from a man who had been under the professional care of both Dr. Keyt and myself, in whom we found, post-mortem, the left ventricle hypertrophied, the mitral valves slightly thickened toward the base, but competent; aortic orifice enlarged and aortic valves thickened, corrugated, and calcified throughout, and evidently wholly incompetent. The ascending aorta was greatly dilated, atheromatous, and studded with calcareous matter, while the transverse portion of the arch was the seat of a large aneurism fully three inches in internal diameter, and with soft and flabby walls.

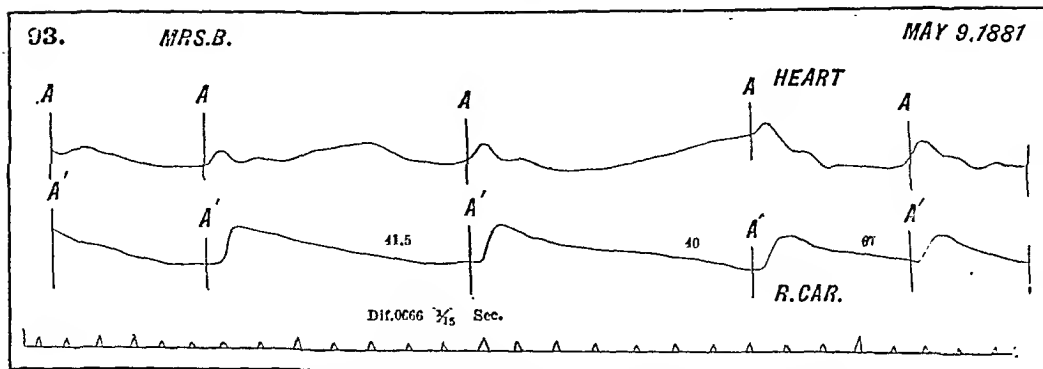
The aneurism in this case was such as must have caused notable pulse delay had it not been counterbalanced by the precipitation of the pulse incident upon aortic regurgitation. The precipitation, Dr. Keyt¹ explains, by presuming that "the base of the arterial column rests against the sides of the ventricle instead of against the aortic valves, and is advanced, causing rise of the pulse with the first movement of ventricular contraction."

Rigid Arteries.—Rigid arterial vessels, such as are met with in the aged, increase the rate of pulse transmission, as may be seen by tracings Fig. 8:—

Tracings Fig. 8 were from Mrs. B., æt. 78. She suffered from dyspnoea, cough, dropsy, and debility, and had an irregular, and, at times, slow pulse. There was a systolic murmur distinct over the cardiac area,

¹ Boston Med. and Surg. Journal, Sept. 30, 1880.

Fig. 8.



Cardio-carotid time difference about $\frac{1}{15}$ sec. Normal time-difference $\frac{1}{12}$ sec.

plainly heard at both base and apex, but emphasized at a spot midway between these sites. The second sound was pure and clear. Tracings were taken at the Cincinnati Hospital May 9, 1881, where she was a private patient under the care of Dr. Keyt. Death occurred at Newtown, O., from dysentery, July 9, 1881, while under the treatment of another physician. I performed the post-mortem July 11, 1881, in the presence of Drs. Keyt and Witham and medical student Jones. The heart was fatty. There were calcareous and fatty alterations of arterial walls. The aorta was of normal size, and its orifice was uneontraeted. The aortic valves were competent, but two segments presented rough calcareous nodules upon their upper aspect. A prominent nodule projected from the ventricular surface of one segment near its attached border. One segment was free from calcareous matter, but was slightly expanded and thickened. The valves were perfectly pliable and competent by the hydrostatic test. The mitral and tricuspid valves were slightly thickened, but competent, as were also the pulmonic valves.

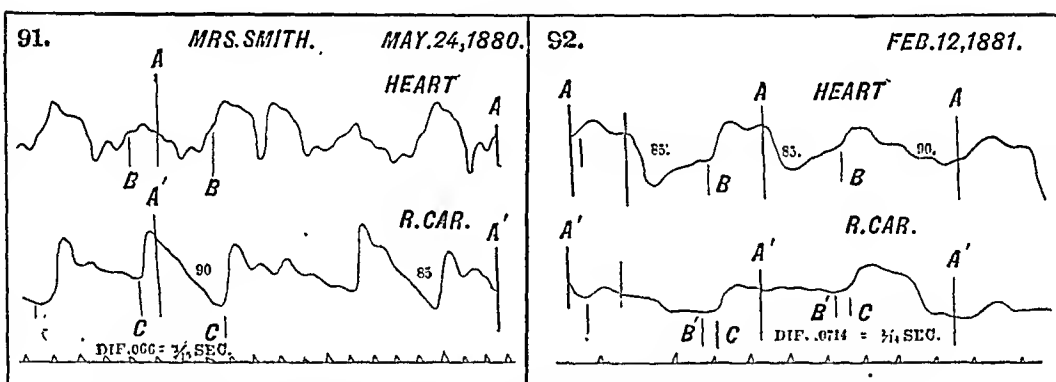
In the above case the cardiac second sound was perfectly clear, and there was a systolic murmur with greatest intensity midway between the base and apex. The absence of all indications of aortic regurgitation led to the decision of pulse precipitation from rigid arterics, and the absence of marked evidences of cardiac hypertrophy gave warrant to the conclusion that even in the right heart there could be no material disturbance of valvular action. The precipitation in the case is really much greater than the figures show, since, with a pulse at even 60 per minute, the normal delay is greater than that which we have given for a pulse of 72 per minute. We will have occasion to revert again to these tracings in the course of this article.

Having considered the conditions which may affect the rate of pulse transmission, a few words may be devoted to the cardio-sphygmograph indications in aortic and mitral stenosis. Aortic stenosis does not alter

the transmission rate of the pulse. A marked degree of stenosis deforms the pulse trace, producing one with sloping ascent and rounded top. It may also occasion intermittency. It all depends, however, upon the degree of narrowing. If the orifice is sufficient to permit of pretty free filling of the aorta by the ventricular contraction, the sphygmographic evidence of aortic stenosis is nil. In regard to mitral stenosis, no cases have as yet come under observation. From the markings of aortic stenosis, and deductions drawn from the course and mechanism of the circulation, it would make no variation in the pulse-rate transmission, but would give rise to a pulse of small tension, and one which might present intermittency at times. The auricular portion of the trace would undoubtedly have unusual prominence.

Affections of the valves and orifices of the right heart, of course, only have a negative bearing upon cardio-sphygmography, because the blood current which traverses them does not pass into channels accessible for investigation. The negative value of the sphygmograph in right heart complications is well exhibited by tracings Fig. 9.

Fig. 9.



Cardio-carotid time-difference about $\frac{1}{15}$ sec. Normal time-difference with pulse at 90 about $\frac{1}{15}$ sec.

Tracings (Fig. 9) were from Mrs. Smith, æt. 59. Her symptoms were shortness of breath, inability to exercise, some cough, anasarca of the lower extremities, ascites, and intermittent pulse. The area of cardiac dullness was much increased, showing decided cardiac hypertrophy. There was a loud diffused systolic murmur, plainly accentuated at the apex, and in all respects, apparently, a typical example of a mitral regurgitant murmur. The second sound was clear and intensified at the pulmonic site. Tracings were taken in May, 1880, and February 12, 1881. Death occurred May 7, 1881. At the post-mortem, Dr. Keyt being present, we discovered the heart generally enlarged, walls of right auricle and ventricle greatly thickened and the great veins dilated. Pulmonic valves normal; right auriculo-ventricular orifice dilated, and tricuspid valves wholly in-

competent, one segment being firmly bound down by adhesions to the side of the ventricle. Aortic valves normal; mitral valves slightly thickened, but competent. Texture of heart fatty and friable.

In the absence of all indications of aortic regurgitation, it was concluded that, in this case, the left heart was properly functioning, and that the lesion must be located in the right heart, where it would not affect the cardio-arterial tracings.

The negative evidence the sphygmograph furnishes of perfect valvular mechanism in the left heart finds good illustration in tracings Fig. 8, together with the data and observations thereto pertaining. The negative evidence supplied by the compound sphygmograph is not less valuable than its positive evidence, and it becomes positive evidence taken in connection with clinical symptoms and physical and objective signs.

From what has preceded, though it has been presented rather in the form of an easy lesson in cardio-sphygmography, it is thought that enough proof has been advanced to establish the graphic method as an important adjunct in differentiating some of the complex instrumentalities which induce disorders in the course of the circulation, and alterations in normal cardiac and arterial sounds. Assuming that this much will be admitted, its advantages in life insurance examinations are great.

It is one of the prerequisites to a life insurance policy that the holder shall be a healthy person. Individuals come up for examination presumably as those who regard themselves perfectly sound, or, at least, presenting no traces of disease detectable to the medical examiner. The examination is made, and an abnormal cardiac murmur is heard. Neither symptoms or appearance or anything in the history of the applicant show disqualifying lesion,—there is nothing but this little whiffing sound, bearing some relation to the heart beats. Without the graphic method the examiner cannot determine whether the sound be structural or functional. Provided the sound be constant, its character and location go for nothing in the differentiation. The risk cannot be given a clean recommendation. The examiner may say that he *believes* the murmur to be functional, and the risk a good one, but he cannot state that he has any warrant for this opinion beyond the appearance and history of the applicant, and the probabilities are that if a medical examiner mentions a heart murmur, the medical director will reject the risk no matter how strongly the former expresses his confidence in a sound of functional character. On the other hand, an examiner, by the aid of the graphic method, conjoined with other means of investigation, may base his opinion upon the functional or structural significance of a murmur with almost as much certainty as upon a mathematical demonstration. If the normal pulse delay obtains between the heart and carotids, and radials and dorsal arteries of the feet, he may say that an instrument of precision gives unequivocal evidence of simple functional or mechanical origin of the murmur. But before he is entitled

to make so confident an announcement, he must have ascertained that there is no aneurism and aortic regurgitation to counterbalance each other in their influence upon pulse transmission, and that there are no valvular lesions of the right heart. This he may do by an entire absence of the clinical symptoms and physical signs indicative of these troubles. Then, too, if the cardio-sphygmograph reveal abnormal pulse delay or pulse precipitation, or pulse deformation or marked prominence of the auricular portion of the trace, the examiner may say that the instrument of precision, in connection with the other features in the case, writes a record of aneurism, or mitral regurgitation, or aortic regurgitation, or aortic or mitral stenosis, as the condition may be. Can an examiner without the assistance of a compound sphygmograph arrive at a conclusion with equal certainty? Without exception, where autopsies have been obtained, the conditions of the circulatory organs have corroborated the deductions derived from a study of the cardio-sphygmographie tracing during life.

Every competent physician of considerable experience knows how fallacious many cases of heart murmurs prove themselves. He finds murmurs in some instances in which he is apprehensive of grave cardiac mischief and discovers that they have disappeared, after a time, without any apparent harm surviving them. On the contrary, instances are unfortunately not wanting of supposed innocent murmurs becoming the heralds of serious cardiac disease. It is the uncertainty which even the most accomplished clinician must feel in regard to many cases presenting cardiac murmurs that makes insurance companies so chary about accepting risks in which there may be possible danger from this source. We think that, with the progress already made in cardio-sphygmography, it is perfectly practicable to distinguish the acceptable from the non-acceptable risks in almost every instance of persons coming under examination with heart murmurs. This method of investigation is new, its data, as yet, comparatively limited, but it promises to be developed until nearly every point in cardio-vascular pathology finds its interpretation by this means.

WALNUT HILLS, CINCINNATI, O.

ARTICLE XII.

A REPORT OF THREE HUMAN MONSTROSITIES. By M. A. KOOGLER, M.D.,
of De Graff, Ohio.

OF late the village of De Graff, Ohio, gave record to three monstrosities: one eyelops and two acrania, in less than two months.

The first occurred in Dr. D. W. Richardson's practice, the second in that of Dr. F. M. Galer's, and the third in the writer's practice.

CASE 1. *Cycloopian Monster*.—Dr. D. W. Richardson was called, on the evening of Dec. 7, 1881, to attend Mrs. D., a multipara, in labour, but did not reach the patient until the child was born. According to the father's statement the child lived ten or fifteen minutes after birth. On inquiry, the doctor could not find anything abnormal in the labour, only an excessive amount of the liquor amnii.

The next morning he came in possession of the child; and brought it to my office for examination.

It was a female, born at term, weighed four pounds, and body well developed. It had but one eye, of normal size, situated in the middle of its face, and a little above where the mouth should have been.

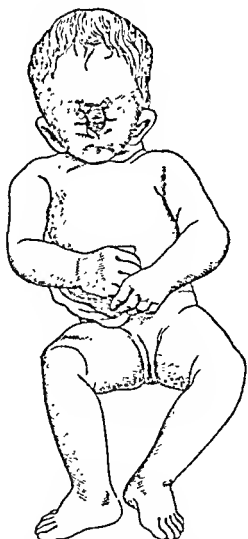
The nose consisted of a mere conical fleshy semi-tube, starting out by its smaller end, immediately above the eye; its dimensions being a little over an inch in length, and about half an inch in diameter at its free extremity. It contained no cartilage, and, instead of two anterior nares, there was but one small, round opening, or canal, about one-fourth of an inch in depth. It was quite soft and flexible, and hung loosely over the eye.

The maxillary bones were united, and no line between them could be determined. The mouth consisted of a small aperture, and situated under a small fold of skin, immediately beneath the symphysis of the inferior maxillary bone. A probe could be passed through this small opening into the throat.

The ears were of normal size, but situated much lower, and approaching each other.

There were apparently no external auditory canals, but, instead, there were two small depressions.

Fig. 1.



Cycloopian monster. Head flexed.

Fig. 2.



Cycloopian monster. Head extended.

The ears were symmetrical, and the lobes and the cartilages below the tragi and anti-tragi were absent, and in their place, running inwards and approaching one another, were two slit-like openings, about one-third of an inch in length. These openings communicated with the larynx, and a

probe could be passed in the one and out of the other. The father stated that during the time it lived, "its breathing was through these openings." The appearances of the monster are well shown in the accompanying drawings (Figs. 1 and 2).

CASE II. *Acranial Monster*.—Dr. F. M. Galer was called, on the evening of Dec. 9, 1881, to visit Mrs. E., a multipara, who was in labour at term. After the os became thoroughly dilated, a digital examination revealed nothing, and it was thought to be a breech-presentation.

The membranes were ruptured, and two peculiar eminences were felt, but the exact condition could not be determined until the head presented externally, when an acrania monster was discovered.

Duration of labour eleven hours. The child was born alive, female, weighed six pounds, and lived a short time. *Post-mortem* examination twelve hours after birth. The body and extremities were well developed, with the exception of the thumbs being a little too long, and two of the fingers, on the left hand, being drawn down into the palm.

The head of the child was badly deformed, or, more properly, deficient. The bones of the cranium, that were present, were the orbital and nasal portions of the frontal, mastoid, and petrous portions of the temporal, ethmoid, sphenoid, and the basilar portions of the occipital.

The cranial bones were, therefore, absent down to the base, and the space was covered with a membrane, having the appearance of the dura mater, running into the hairy scalp on its borders.

Anteriorly were two glandular-like eminences, about the size of an almond. Beneath the membrane was a small quantity of fluid.

The cervical vertebræ were wanting, and the first dorsal articulated with the cranium.

Nothing could be found corresponding to the medulla oblongata. The most noticeable feature in the case, independent of the malformation of the child, was the abnormal amount of the liquor amnii.

The face had an idiotic expression, the upper eyelids very prominent, mouth large, lips thick, and nose flat. The ears were of normal size, and the helices drawn forward, giving them a drooping-like expression.

CASE III. *Acranial Monster*.—I was called, on the morning of Jan. 26, 1882, to visit Mrs. G., a multipara, who was supposed to be in labour at ten months.

On examination *per vaginam*, I found the os well dilated, and the membranes protruding, but the presenting part was too high to be within reach, and I consequently thought it to be a breech presentation. I was unable, by abdominal examination, to diagnose the position of the child. I ruptured the membranes, and the waters escaped with a rush, and in thrice the quantity I had ever seen on any previous occasion.

After the waters had escaped, the presentation was still too high to be determined with any certainty, and I was uncertain as to what part was presenting, until I introduced my hand into the uterus, and found it to be a deformed head.

The child was born in first position about one hour after the membranes were ruptured. The child was born alive and made a few movements, when it died of asphyxia.

It was a female, weighed five and one-half pounds, body and extremities well developed, and the deformity of its head parallel to the preceding case.

The whole of the forehead, summit, and, as nearly as could be determined, the greater portion of the occipital bone were wanting. The only

substance, that could be detected to resemble brain-tissue, were two masses, not so large as almonds, situated anteriorly and immediately above the orbits.

The base of the brain was covered by membranes externally resembling the dura mater, and ran into the hairy scalp. Beneath the membranes was a small quantity of fluid not exceeding one ounce. Its face presented an idiotic look, the mouth wide, lips thick, and separated; nose very flat, and upper eyelids protuberant. The neck was short, and as far as could be determined the cervical vertebræ were wanting. The ears were of normal size, and the alæ were rolled upon themselves. No *post-mortem* examination was permitted.

There was an abnormal amount of liquor amnii in each one of these cases.

ARTICLE XIII.

DISSECTION OF A HUMAN OTOCEPHALIC CYCLOPS MONSTROSITY. By ROBT. MEADE SMITH, M.D., Demonstrator of Physiology, and ANDREW J. PARKER, M.D., Professor of Zoology in the University of Pennsylvania.

At the request of the Mütter Museum Committee of the College of Physicians of Philadelphia, who obtained possession of the specimen, we were able to dissect the Cyclops monster, described as Case I. in the preceding article.

We find it necessary to make very few additions to the description there given of the external appearances, though dissection enabled us to correct several errors which were unavoidable with the exterior alone for a guide. We find that the monster belongs to the group of *otocephala* of St. Hilaire, and to the division of this group which he calls *edocephala*, characterized by the tendency to fusion of the external auditory apparatus beneath the head, the rudimentary condition of the lower jaw, absence of mouth, and presence of a rudimentary nasal apparatus, in the form of a proboscis, above a single eye placed in the centre of the face.

The specimen referred to us for description was that of a female fœtus, probably, from the undeveloped condition of the larynx and finger-nails, in the eighth month of gestation. The only abnormality was in the development of the head, and our description, therefore, will be confined to that region:—

The general shape of the cranium is normal, with the frontal region at first sight apparently well developed, no suture being perceptible between the frontal bones. The frontal protuberances are represented by two marked prominences at the line of union of the frontal and parietal bones; although, therefore, really malformed, the general appearance of the frontal region is that of a normal skull. The circumference of the head over the frontal protuberances is 26.3 centimetres. The occipital and parietal prominences are

well developed, and the occipital and frontal fontanelles occupy their normal positions; the latter, however, being triangular in shape, with the base anterior, instead of quadrangular. Situated 4 em. behind the frontal fontanelle, and 1 em. in front of the occipital fontanelle, in the line of the sagittal suture, there is an oval defect in development of the parietal bones, 2 em. in diameter laterally, and 15 mm. in antero-posterior diameter.

Situated immediately below a quasi glabellum, 15.1 centimetres from the occipital prominence, there is a fleshy, flexible, trumpet-shaped proboscis, 2 centimetres in length, 1 centimetre in diameter at its free end, and 5 millimetres in diameter at its point of attachment. It is covered throughout with integument, continuous with that of the frontal region, which, at its free extremity, is invaginated to form a single blind pouch 3 millimetres in depth and in diameter.

Immediately below this rudimentary nasal apparatus, and overhung by it, is situated a single eye, placed in the median line, in a bony orbit of nearly circular outline, the diameter of the palpebral fissure being 16 millimetres. The upper and lower eyelids are feebly developed, and meet at each side in a shallow groove or furrow, extending outwardly 3 millimetres; the upper lid is circular in outline at its margin, and freely separated from the eyeball to the depth of 3 millimetres; eyelashes are well marked, and, although the frontal region is covered with faint downy hair, there is no indication of an eyebrow. The lower eyelid has a crescentic emargination in the median line, where it is attached to the eyeball, the remainder of the lid being free from the eyeball to the depth of 3 millimetres, as in the case of the upper lid. From the feeble development of the eyelids the eyeball is left considerably exposed.

Below the single orbit the superior maxillary bones are easily detected; they are narrow and more flattened laterally than is normal. Below the inferior margin of the superior maxillary bone there is a second fleshy prominence, closely resembling in general outline a normal chin; no signs of an inferior maxillary bone can, however, be detected. At the summit of this tuberosity, which is about 3 centimetres in diameter, and 2 centimetres in height, there is situated a circular opening, 3 millimetres in diameter, communicating with a blind pouch 23 mm. in depth, and of the same apparent breadth.

The neck is somewhat flattened antero-posteriorly. On its upper portion, displaced below the base of the skull towards the median line, are the external auricles, the external auditory meati being represented by two slit-like openings, 23 millimetres apart, occupying their normal relations to the auricles, inclined downward and toward the median line. A probe can be readily passed through these openings into the pharynx. The helix and anti-helix are moderately well-marked, and the anti-tragus and lobe of both ears are present; the tragus is not discernible.

On removing the calvaria it was found that the brain did not completely fill the cranial cavity. The cerebrum was found incompletely divided into two hemispheres, anteriorly no separation having taken place; posteriorly, however, the cerebral sac diverging into two lateral masses. The frontal lobes of the hemispheres were represented by a single mass, containing the conjoined lateral ventricles; the temporal lobes were normally developed as regards their form and position, and separated from the common frontal lobe by a distinct fissure of Sylvius; the posterior lobes were absent, there being no posterior horn of the lateral ventricle. The posterior divergence

of the cerebral sac completely exposed the thalamencephalon, mesencephalon, and cerebellum.

The dura mater and pia mater were tightly adherent to the surface of the cerebrum; the cerebral falx was absent, unless it be represented by the two diverging folds of dura mater, which enveloped the diverging lateral cerebral masses. The tentorium was represented by two crescentic folds, extending out a short distance from the petrous ridge. The longitudinal sinus was, of course, entirely absent; there existed, however, two venous channels originating at the point of divergence of the cerebral lobes, whilst posteriorly they followed the divergence of the lobes to empty into the lateral sinus at the position of the jugular foramen, instead of at the normal position opposite the internal occipital prominence.

The dura mater was firmly attached at a point corresponding to the crista galli, which was, however, not developed.

The pia mater followed the dura mater, and the velum was represented by a distinct fold, which did not, however, extend into the lateral ventricles.

With the exception of the fissure of Sylvius, there were no signs of fissures or convolutions, the surface of the cerebral sacs remaining entirely smooth; the cerebellum, however, exhibited faintly marked transverse fissures.

From the disorganized condition of the brain we were unable to determine completely the structure and relative position of many of its parts, but we present the following as perhaps of interest: The lateral ventricles were represented by a single cavity, of a horse-shoe shape, its limbs passing backwards into the diverging cerebral sacs; the septum lucidum, fifth ventricle, fornix, and corpus callosum were entirely absent. No corpora striata were observed, though, from the disorganized condition of the brain, it is possible that they escaped identification. The conjoined lateral ventricle communicated by a large opening, twelve millimetres in diameter, representing the foramen of Monro, with the third ventricle. The optic thalami, pineal body, and infundibulum were present, but no trace of the pituitary body was found. The mesencephalon was normally developed, the Sylvian aqueduct passing from the third to the fourth ventricle, having above it the quadrigeminal bodies and valve, and below the cerebral peduncles. Nothing abnormal was noted in connection with the cerebellum, medulla, pons, or fourth ventricle.

On removing the brain from the cranial cavity, it was found that the olfactory lobes were absent, as were also the optic tract and chiasm; the latter being represented in the cranial cavity by a single nerve, which passed through a single optic foramen. The remaining cranial nerves appeared to be normal.

A few observations were made upon the muscles of the face and head. The occipito-frontalis was well developed; the auricular muscles were normal. Rudimentary fibres were found arising from the temporal fossa, great wing, and pterygoid process of the sphenoid and from the zygomatic arch, representing from their origin and direction the temporal, masseter, and pterygoid muscles; from the absence of the lower jaw they were naturally not normally developed. The fatty cheek-pad was well formed, but was situated upon the squamous portion of the temporal bone. An orbicularis palpebrarum encircled the single eye. With regard to the remaining facial muscles, nothing definite could be determined.

The blind pouch, situated below the superior maxillary bones, described

above as communicating with the exterior by a small rounded aperture, proved to be a rudimentary mouth (stomodæum), lined with mucous membrane, and presented upon the alveolar ridge of the superior maxillary bone distinct prominences which were found to be produced by the teeth pertaining to the superior maxillæ; that is, four molars and two canines, the incisors being absent. The salivary glands were not present.

A microscopic examination of the nasal trumpet revealed the following facts: Externally it was covered with integument, which passed into the blind sac situated at the free extremity, without exhibiting any tendency to become converted into mucous membrane. Numerous sebaceous and hair follicles and rudimentary muscular fibres were found. In the interior the lateral nasal cartilages were represented by a truncated, hollow, cartilaginous cone, compressed laterally, notched at the apex, and at the base of the inferior margin showing a tendency to inversion. In the interior of this cone was a nearly circular cavity lined with mucous membrane. This cavity was separated from the blind integumental pouch by a partition about three millimetres thick. No cartilaginous or bony septum could be discovered, either in the proboscis or at its point of attachment to the frontal region.

The eyeball was exposed *in situ* by the removal of the roof of the orbit. The levator palpebre was represented by a single well developed fan-shaped muscle, supplied by the oculo-motor nerve, arising normally from the apex of the orbit, to be inserted into the superior tarsal cartilage. On dividing this muscle, two straight muscles, lying at equal distances from the median line, were found arising from the apex of the orbit and inserted into the anterior portion of the eyeball; these represented either two superior recti or a single rectus and a superior oblique. The absence of any intermediate tendinous portion and their similarity in origin and insertion, as well as the points hereafter described with regard to the interior of the eye, incline us to the former view. A single inferior rectus and a lateral rectus on each side were found; the right lateral rectus was joined at its anterior third by a band of muscular fibres, probably representing a single inferior oblique, arising from the left inferior wall of the orbit. An ophthalmic ganglion was found situated between the right lateral rectus and the optic nerve. This, together with the relations of the inferior oblique muscle, would indicate that the single eyeball corresponded with the right, whilst the left was undeveloped.

The sclerotic was well developed; the cornea, iris, and pupil circular; a single lens of normal shape with no signs of a groove or fusion of two lenses. The vitreous humour and ciliary processes were normal, and the choroid present as a separate tunic.

The retina was detached and too friable to admit of accurate study. On removing the retina, two coalesced cribriform spots were found, as if the optic nerve had partially subdivided at this point, although outside of the eyeball not a trace of division could be detected. On cross-section of the optic nerve at its point of passage through the sclerotic, it was found that the apparent fusion of two cribriform spots was associated with an attempt at subdivision of the optic nerve at that point, two central retinal arteries being detected, which, outside the eyeball, united to a common trunk. This was the only sign present of any attempt at subdivision, or indication of fusion in the eyeball, though no study could be made of the retina.

On examining the auditory apparatus, the two external auditory canals were found to communicate directly with the pharynx, their entrance being

surrounded by two tympanic bones separated by an interval of 17 mm.; there was no sign of tympanic membranes. Lying between the tympanic bone and the periotic capsule (hyo-mandibular cleft) were found the malleus, incus, and stapes of each side. The handles of the two mallei were directed downwards, forwards, and inwards, and the head of each articulated with an incus; the processus gracilis of each malleus turned inwards towards the median line, and was united by a slender splint-like bone with its fellow of the opposite side. This probably represented an undeveloped lower jaw. The stapes and anvil were partly surrounded by an imperfect bony canal formed by the tegmentum tympani, representing an imperfect middle ear. The two processes of each incus were directed upwards, outwards, and backwards, the long process of each articulating with the stapes whilst the short process was attached to the roof of the imperfect tympanic cavity by a distinct ligament. The stapes articulated with the oval window, and was somewhat deformed. The chain of ear ossicles was, therefore, directed from within outwards instead of the normal reversed condition.

The larynx and trachea were normally developed, the two plates of the thyroid cartilages being ununited. The epiglottis and hyoid apparatus were present, but there was no trace of a tongue. The muscles below the position of the hyoid were found in their ordinary condition, but above there was an indistinct undifferentiated muscular mass which represented the undeveloped muscles of the floor of the mouth. The pharynx was attached to the base of the skull and ended in a cul-de-sac above, separated from the stomodæum by a partition 1 cm. in breadth, no communication existing between the pharynx and the nasal cavity already described.

With regard to the skull, the following may be noted: The occipital segment is normally formed, consisting of the basi-supra- and ex-occipitals. The parietal segment has a well developed basi-sphenoid, two alisphenoids or greater wings, and is completed by well developed parietals. The frontal segment is, however, somewhat modified, the presphenoid is absent, whilst the orbito-sphenoids, or lesser wings, have been displaced backwards, uniting with the basi-sphenoid posterior to the origin of the alisphenoids. They have also approached laterally towards the median line where they have coalesced, presenting in the centre a single optic foramen. The appearance of the combined orbito-sphenoids is, therefore, that of a triangular splint-like bone, having its base resting on the internal upper edges of the approximated alisphenoids, not articulating with the orbital plates of the frontal, and its apex co-ossified with the basi-sphenoid; as a result of this, there is no pituitary fossa, but instead a bridge of bone leaving a space of about 3 mm. between it and the base of the skull. As a consequence, also, of this union of the orbito-sphenoids and absence of the presphenoid, the sphenoidal foramina are represented by a single opening situated between the internal edges of the alisphenoids, and beneath the bridge-like orbito-sphenoid.

The pterygoid processes are small and not well developed.

The frontal bone is represented by a single bone in which, however, a distinct sutural line can be detected. It is greatly malformed, having only about one-half the breadth and two-thirds the normal height. No frontal prominences can be detected, the glabellum and internal angular processes are entirely absent, the supra-orbital ridges of the two sides meeting in the middle line form a single ridge bounding the orbital

cavity above. The external angular processes are well developed, and articulate with the malar bones below. There is a single orbital plate with a large deficiency in the centre corresponding to the ethmoidal notch: posteriorly it articulates with the alisphenoids instead of the orbito-sphenoids. The ethmoids are entirely absent. The temporal bone has all of its elements represented, the petromastoid presenting its normal appearance and relations, with the exception that a thin plate of bone has been given off inferiorly to insheath an imperfect tympanic cavity, taking the place, to a certain extent, of the tympanic bones which we have described above as being displaced to an abnormal position at the base of the skull. The squamosal element has likewise been displaced inwardly so that at the base of the skull they are but five millimetres apart instead of five centimetres, which is about the space normally separating them in a foetal skull of the same age. There is also no trace of a glenoid cavity or fissure, unless the latter be represented by a wide gap lying between the squamosals and the thin plate of bone already described as given off by the petromastoids.

The face is in an exceedingly rudimentary condition, but few of its bones being developed. The ento-pterygoids are present, but have not united with the pterygoid process of the sphenoid, being, indeed, situated posteriorly to them. The palate bones are likewise feebly developed, being represented by two small plates of bone lying between the pterygoid processes. Of the two superior maxillaries, only the bodies are developed, and of these, the alveolar borders form the greater part, the palate plates, parts bounding the nasal cavities, tuberosity, infra-orbital ridges, and pre-maxillary portion and nasal spines being entirely absent. A small orbital surface, formed by the conjoined plates of the two bones, exists, however, and the two infra-orbital ridges are well marked.

The malar bones are normally formed, but owing to the arrested development of the superior maxillary bone, they approach one another and are separated in the median line by a distance of five millimetres instead of four centimetres, the normal intermalar space. On this account they form almost entirely the inferior and external boundaries of the orbit. A distinct zygomatic process is present, but it does not unite with the zygomatic process of the squamosal.

Of the remaining bones of the face, the lacrymals, nasals, turbinates, and vomer, are entirely absent, whilst the inferior maxillary is only represented by the small splint-like bone previously described.

The single orbit is formed by the following bones; Above by the orbital plate of the frontal, posteriorly by the orbital surfaces of the alisphenoids, inferiorly and laterally by the malars and conjoined orbital plates of the superior maxillaries. The elements absent that enter into the normal construction of the orbit are the orbital surfaces of the ethmoid, the lacrymal, orbito-sphenoids, and orbital plates of the palate bone. The shape of the orbit does not differ widely from the normal form, and has entering into it the following apertures: A single optic foramen, a single sphenoidal fissure formed by the union of the right and left, two rotund foramina, and two sphenomaxillary fissures.

The nasal cavities are entirely absent.

The chief interest to be derived from the study of monstrosities, such as described above, lies in the explanation of the causes which have led to the various deviations from their normal development. While we have

found accounts of numerous monsters which, from their general appearance, probably resembled, in many points, the one described, the narrow-mindedness of custodians of museums, who are satisfied with a general description of the exterior and are then content to suspend the specimens in jars for the amazement and *instruction* of the curious, has greatly interfered with a scientific knowledge of the laws of teratology. Without a thorough dissection of the internal parts nothing, as to the causes producing deformity, can be determined.

A study of the monstrosity described above shows that all the deviations from the normal type can be explained by the modification or non-development of certain parts.

Normally, the brain develops in the following manner: The anterior end of the primitive medullary tube dilates into three cerebral vesicles; of these the first remains as the thalamencephalon, sending off anteriorly two prosencephalic buds to form the hemispheres. These, in their turn, send off each a secondary bud, the rhinencephalon, or olfactory lobe. In the case before us, however, the thalamencephalon has been normally developed, but instead of sending off a pair of prosencephalic buds, but a single bud was formed, which, however, partially divided posteriorly into two. The reason for considering that but a single bud was given off, rather than that fusion occurred between two primitive buds, lies in the absence of any partition wall between the homologues of the two lateral ventricles. No secondary buds, or rhinencephala, were given off, hence the entire absence of olfactory lobes.

In the same manner, we believe but a single optic bud appeared; hence the median position of a single eye.

The explanation ordinarily given for the approximation of two eyes, or the presence of a single eye in the comparatively well-described group of simple cyclops monstrosities, is that two primitive optic buds have converged and coalesced in the median line; in many cases this may be the correct explanation; but where, as in the present instance, but a single eye has appeared, or where there is a close coalescence of two eyes, it appears to us much more probable that but a single median primitive optic bud has been given off from the thalamencephalon, and that this bud either remains entirely single, thus producing but a single eye as in this case, or that in those cases which present an apparent fusion of two eyeballs and optic tracts, the primitive median optic bud has subdivided more or less completely into two. It is difficult to conceive that after the coalescence of two primitively distinct optic buds, the mesoblastic tissues, which go to form the tissues of the eyeball, should be able so to adjust themselves as to produce a single perfect and normally developed eye.

Owing to this development of a single optic bud, or it may be the convergence and coalescence of two primitively distinct buds, the molecular

arrangement of the embryonal cells situated at the base of the skull is so disturbed that we find in all these cases of cyclops that the fronto-nasal process fails to develop. As a result of this follows the entire absence of all the bony parts, developing normally from this process, viz., the ethmoid, nasals, lacrymals, vomer, and pre-maxillary bone, and hence the presence of the eye beneath a nasal proboscis belonging only to the skin.

The absence of the lower jaw and malformation of the auditory apparatus, an arrangement which, so far as we have been able to learn, is entirely unique, may be explained as depending upon defective development of the first visceral arch. Normally from the base of the primitive cartilaginous cranium we have given off on each side two cartilaginous ventral rods, which pass down into the anterior visceral arches. From the first of these we have given off the palato-pterygoid plate, which passes out into the maxillary process, to form the basis of the upper jaw, whilst the continuation of the rod extends downwards, under the name of the cartilage of Meckel, into the mandibular arch and forms the basis of the lower jaw. The second cartilaginous rod forms the hyoid series. In the higher vertebrates the proximal element of the mandibular arch is converted into the malleus, the homologue of the quadrate bone of lower forms, whilst the proximal element of the hyoid arch is converted into the incus, the homologue of the hyo-mandibular. The remaining auditory ossicle or stapes is formed, according to most authorities, from a part of the periotic capsule.

In the present case, the deviations from the normal form have been produced by the irregular development of the cartilages of Meckel. These, instead of passing downwards, turned inwards towards the base of the skull, to meet in the median line. Hence, therefore, the lower jaw, which consists of a pair of membrane bones developed in the tissues surrounding the cartilages of Meckel, is represented by a small, slender, splint-like bone, lying at the base of the skull, at a point corresponding in position with that attributed above to the irregularly developed cartilages of Meckel. From this arises also the displaced position of the ear ossicles, which occupy a position at the base of the skull corresponding closely to their normal position in an early stage of development of the hyomandibular cleft.

The hyomandibular cleft, or space between the primitive mandibular and hyoid visceral arches, remains in the higher vertebrates as the external auditory meatus, tympanic cavity, and Eustachian tube. Owing to the approximation of all the parts towards the median line, this canal has been in this specimen very much shortened; the tympanic cavity exists, as we have already described, in an imperfect condition, bounded by the petromastoid and squamosal elements of the temporal bone alone, the tympanic bone, from its displaced condition, not entering into its construction. As a result of this, we find that the portion of the canal corresponding to the

external auditory meatus is quite short, and enters the pharynx below the position of the middle ear, though communicating freely with it. A Eustachian tube does not exist, since the ear ossicles are not entirely closed within the petro-mastoid bone, the malleus lying entirely within the cavity of the pharynx. The internal ear was normal.

ARTICLE XIV.

ON THE USE OF CARBONATE OF AMMONIA AS A STIMULANT. By E. P. BREWER, M.D., Ph.D., of Norwich, Conn.

FEW remedies have been longer known¹ or more widely used, than carbonate of ammonia, and yet so scantily understood in *modus operandi*. Most varied and extravagant powers have been ascribed to it. It has passed through every phase of therapy, and mingled with almost every order of medicinal classification. In turn it has been pronounced a convulsant, an antispasmodic, a derivative, a constructor, a depressant, and to-day it figures in the capacity of a stimulant. Our modern therapeutics tell us that it enhances the physiological powers of the gastric and bronchial membranes, that it vivifies the circulating and nervous system, and spurs into activity the excretory emunctories. All of this being accepted as a natural result, the lapsing stages of disease are purported to be met and subdued by its administration. Typhoid fever, pneumonia, septicæmia, and adynamic states are almost as certain of receiving their portion of it as is ague its portion of quinine. And its value in preserving life in a multitude of cases I do not deny. However, it is my earnest belief that we should have more fixed indications for its use, that it has become too much the habit of using this drug as a *dernier ressort*, unguided by reason and without recognizable indication beyond a general condition, an adynamic state. Impelled by this belief, I entered upon a series of experimental inquiries to determine, if possible, the indications for its use as a stimulant, the results of which I will now record.

In the variable scope of action of the ammoniacal salts perhaps no action is so common as their stimulating properties. It pervades in varying intensity every one of the compounds now known, and although always present, an intensity of sufficient power to be of large medicinal value is to my knowledge confined to one salt, the carbonate of ammonia. This gives an individuality to the drug and marks that feature that has preserved its memory in the annals of medicine through the darkening shadows of many centuries. Standing unique in its group in that peculiar power of

¹ This medicine was long known to the Hindoos.

exaggerating physiological activity, a study of its chemico-physiology if rightly conducted to success will elicit the basis of force in this specific drug.

At the onset it is of paramount importance that we perfectly understand the changes occurring in the stomach and the form of its entrance into the blood. To this end we have recourse to practical study.

Expt. 1. Kitten, weight 14 ounces; pulse 104; respirations 30 per minute. Exhibiting chloroform to narcotism, a soft catheter was passed into the stomach and five grains of carbonate of ammonia, in solution, injected. Slightly withdrawing the catheter, I introduced the end of it into a water-bath of lime-water in a manner that any gas generated in the stomach could escape and be collected in a receiver. In a few moments a bubble of gas escaped, then very slowly a series of them, in all perhaps three cubic centimetres. Examining the receiver of lime-water with the gas above it, at their junction a white film was visible, this being fairly distinct with a hand magnifying-glass. The gas gradually disappeared, and in two hours was entirely absorbed, leaving behind only a white sediment. Collecting the precipitate it was found to consist of the carbonate of lime.

The evolution of gas following the ingestion of the medicine, portrays a chemical action between it and the gastric juice, and further, this gas consisting of carbonic acid, as shown by its combination with lime, would seem to prophesy that the drug entered the system in other form than that of the carbonate.

To verify our study, we proceeded as before, and entered upon *Expt. 2.* Excepting a slight residue of unabsorbed gas in the receiver it furnished the results of *Expt. 1.*

Expt. 3. The ammonia was introduced as in the previous experiments, and the catheter withdrawn. In three minutes the cat was bled to death. On opening the abdomen the stomach was found distended with gas. Tying the œsophagus and pylorus, the stomach was removed, and its gaseous contents collected over a water-bath of aqua calcis. Again, the gas united with the lime, forming a precipitate of lime carbonate.

Other experiments (now 10 in number) of like nature gave results in total harmony with the preceding. In view of eliciting the acting agents in this chemical union, we singly placed in contact with carbonate of ammonia all of the ingredients of the gastric juice. No chemical action is determined with any of them except hydrochloric acid. However, when they are placed in contact, ebullition follows, and a gas—carbonic acid—is given off, the chlorine of the acid unites with the ammonia, producing muriate of ammonia, leaving free one atom of oxygen and two atoms of hydrogen, which unite to form water. As a legitimate sequence, we would suggest that the free hydrochloric acid of the gastric juice (Schmidt, Eberle, Prout, Bidder, and Dunglison) combines with the carbonate of ammonia, forming muriate of ammonia and water, and evolving carbonic acid. In the language of chemistry, the reactions may be expressed as follows: $N_4H_{16}C_3O_8 + 4HCl = 4NH_4Cl + 2H_2O + 3CO_2$.

Muriate of ammonia being the result of the chemical action, it would seem a self-evident truth that upon it devolved the responsibility of effects, and that, when prepared without the body and administered, it

would in efficacy as a stimulant be equal to carbonate of ammonia, and further that their toxic doses would be uniform.

In point of fact, such is diametrically opposite to the testimony of research, the truth of which we will put to test.

Expt. 4. Kitten, weight 13 ounces; pulse 110; respiration 34 per minute. Under chloroform anæsthesia I threw into the stomach *one drachm* of muriate of ammonia. Discontinuing the anæsthesia the animal recovered consciousness, got up and walked about. In a few moments it tried to vomit but was unsuccessful. The nausea apparently soon ceased, and the kitten suckled its mother. The pulse increased to 130, and the respiration to 56 per minute. The kitten was disposed to sleep the rest of the day, and beyond a watery diarrhœa on the following day no other symptoms were manifested.

Expt. 5. Kitten, weight 15 ounces; pulse 106; respiration 35 per minute. *Five grains* of carbonate of ammonia, in solution, were injected into the stomach, chloroform being exhibited. In five minutes the breathing became irregular and deeper, twenty-eight per minute. The animal tries to walk but staggers and trembles, and then ceases the effort, which evidently causes much exhaustion. In twenty minutes the front paws twitched convulsively, and with perfect regularity with the onset of respiration. In thirty minutes the breathing was ten per minute, and the pulse 140, strong, and regular; the twitching of the paws continues.

In sixty minutes life was extinct, the respiration becoming slower and slower until about ten minutes before death, when it became very rapid, and shallow, and ceased. On dissection the stomach was found distended and injected, particularly at its pyloric extremity, while the intestine was normal. Both lungs were intensely congested, and the heart firmly contracted on its left side. Cutting the vena cava, the heart commenced to dilate and contract. Being unable to bury the carcass at that time, I rolled it in a cloth and left it in my study. Three hours later, returning for its burial, I inadvertently removed the covering, and to my surprise found the heart still sluggishly contracting. Entirely severing the heart from the body, and placing it in tepid glycerine and water, the contractions continued two and one-half hours longer, or in all five and one-half hours from the time of death.

To dispel the possibility of tolerance to the ammoniacal salts, in the subject of experiment 4, we submit him, after a lapse of four days, to—

Expt. 6. Weight 13 ounces; pulse 115; respiration 38 per minute. At 9.05 A. M., *fifteen grains* of the carbonate of ammonia are injected into the stomach.

9.10 A. M. Trembling of the extremities; vomiting; pulse 130; respiration 50.

9.12 A. M. Respiration deeper, the inspiratory effort especially prolonged; clonic spasms of the fore and hind extremities.

9.15 A. M. General convulsions and opisthotonos; relaxation quickly follows; pulse 110, full and strong; respiration 20, with prolonged inspiration.

9.17 A. M. The animal utters a cry; the eyes oscillate and become fixed upwards; the tongue protrudes, the jaws work, and the whole body becomes rigid; relaxation follows; pulse 120; respiration 4 per minute.

9.21 A. M. Respiration ceases; the heart continues to pulsate. The time elapsing between the ingestion of the drug and death was sixteen minutes.

Immediately dissecting the body, I found the stomach intensely congested at its pyloric extremity and along the greater curvature; œsophagus normal; lungs filled with blood; the right heart congested; irritating the heart with my scissors it contracted sluggishly. Relieving the distension of the right side by severing the vena cava, the contractions augmented in force. Now removing the heart and placing it in tepid water and glycerine, it retained its contractile irritability for one hour and fifty-five minutes.

The results of experiments 4, 5, and 6 clearly contrast the varying lethal doses of muriate and carbonate of ammonia. Of the former—the muriate—one drachm was taken and retained without deleterious influ-

ence; of the latter—the carbonate—the ingestion of five grains was followed in one hour by death. Again, the animal that took muriate of ammonia (expt. 4) with impunity succumbed in sixteen minutes (expt. 6) after the exhibition of fifteen grains of carbonate of ammonia. Hence, then, we confirm and sustain the assertion of former research that carbonate of ammonia is a more potent poison than the muriate of ammonia.

Hastily reviewed, these facts would seem to invalidate my assertion that carbonate of ammonia is converted into muriate of ammonia, but, in unison with careful study and experiment, I shall show that such is not the case; contrariwise, they form the strongest link in our chain of evidence.

If the distinctive actions of the two salts be due to their assimilation—unchanged—the hypodermic administration of the same quantity as taken in by the stomach should produce at least an equal, if not a better, defined train of symptoms.

This proposition being only susceptible of experimental solution, I resort to—

Expt. 7. Subject a kitten. Weight 12 ounces; pulse 112; respiration 38 per minute. Dissolving ten grains of carbonate of ammonia in ninety minims of water, I injected the whole quantity hypodermically into our subject. In ten minutes the pulse beats numbered 125 per minute, and the respiration 35, otherwise no change was manifested. The appetite and activity remain unimpaired. No abscess followed.

Repeating the procedure in *Expt. 8*, I used 15 grains of carbonate of ammonia, and secured the same result, or rather the same lack of result.

Without remark I will cite—

Expt. 9. Cat. Weight 24 ounces; pulse 95; respiration 28. Aided by chloroform, I passed a catheter four inches into the anus, and injected twenty grains of carbonate of ammonia in solution. A part of it escaped. In ten minutes no symptoms being present, I injected ten grains more, all of which was retained for forty-five minutes. No symptoms being then present, the anal plug was removed, and the bands securing the cat loosened. The animal got up and walked about. In a few moments it passed considerable mucus, and continued to do so at intervals in the next twenty-four hours. No other symptoms were present. The appetite was uninfluenced. The remaining portion of the day it appeared lethargic.

Desiring to corroborate the above I made—

Expt. 10. Kitten. Weight 12 ounces. Cutting into the abdominal cavity, I secured a loop of intestine, opened it, and injected ten grains of carbonate of ammonia in solution. No effect being produced at the expiration of two hours, I then injected ten grains into the stomach. In eight minutes a slight convulsion occurred; in twenty minutes life was extinct. Immediately dissecting the animal, I found the heart still beating. Removing and suspending it in tepid water and glycerine, the contractions continued for two hours and ten minutes.

Our last four experiments (7, 8, 9, and 10) demonstrate that the action of carbonate of ammonia is largely influenced by the avenue of its introduction. By the stomach a rapid and definite action follows; hypodermically, or by the rectum or small intestine, very insignificant results are known, although confessedly a measure of power is exercised (an amount equal and allied to any other ammoniacal salt). Concisely stated, the

result reached is, that *carbonate of ammonia, exhibited by any other avenue than the stomach, sacrifices its distinguishing physiological and toxic properties.*

Inasmuch as a digestive change is effected in the stomach that is unknown to the intestine, the only rational inference is, that by virtue of this process, the distinctive cogency is therein developed or made available.

It has already been shown that the gastric changes depend upon the presence of hydrochloric acid, and, again, that in such situation where it is absent, the drug is inoperative. Now then, if we were to neutralize the gastric acidity and introduce the salt, what would be the result? This leads us to—

- *Expt. 11. Kitten.* Weight 15 ounces. After washing out the stomach with a strong solution of bicarbonate of soda, I injected ten grains of the carbonate of ammonia along with two scruples of soda bicarbonate. Ten minutes later, I washed out the whole quantity with lukewarm water. No untoward symptoms having been presented at the expiration of an hour, I washed the stomach with dilute hydrochloric acid 3ss-3iv, and injected seven grains of carbonate of ammonia. In ten minutes, as before, I washed out the substance with tepid water. During this operation severe convulsions developed and continued until death twelve minutes later, an interval of twenty-two minutes elapsing between the introduction of the poison and death.

We have, at last, reached the experiment that, before all others, links a digestive change to the stomach and fixes indubitably the responsibility upon the hydrochloric acid of the gastric juice. Through its influence the almost innocuous remedy—by the rectum, intestine, and cellular tissue—is transformed into a virulent poison, and gifted with striking medicinal qualities.

Lucid as is the importance of the role played by hydrochloric acid, the manner of consummating this action is not so well defined. It has been suggested that hydrochloric acid, by virtue of chemical affinity united with carbonate of ammonia, forming muriate of ammonia, carbonic acid, and water. To support this supposition, we noted the constant presence of carbonic acid in the stomach after the administration of the carbonate.

Muriate of ammonia, being the only possible remedial agent of this reaction, it would appear we ought to show that the actions of the two salts were identical, but in this we signally failed. Upon what do the specific powers of carbonate of ammonia depend?

That the carbonate is converted into the muriate there can be no doubt; that upon this change depends the powers of carbonate of ammonia, I have distinctly proven; and, further, that the carbonate and muriate of ammonia *do* have distinct specific properties is indisputable.

In considering the chemical qualities of the stomach we momentarily lost sight of two important conditions: 1st. The intermediate state of our compounds in the chemical process; and 2d, the ever acting vital function absorption.

The action of the acid on the salts may be divided into two states, disintegration and construction. Between them the elements exist in a free

state or weak chemical union. For example, betwixt the breaking down of the carbonate by the acid and its reconstruction into the muriate, the hydrogen and chlorine of the acid and the ammonia and carbonic acid of the carbonate must exist uncombined. Although this period may be very brief, it is not too brief for the subtle force of absorption to act upon and utilize the elements as they exist. In this style, in my belief, are the specific actions of the carbonate of ammonia acquired. While the ammonia is in its free state, between the two combinations, it undergoes absorption, and exercises all of the properties we attribute to the carbonate salt. The *correct* formula of the stomachic change is as follows:

$$\text{N}_4\text{H}_{16}\text{C}_3\text{O}_8 + 2\text{HCl} = 2\text{NH}_4\text{Cl} + 3\text{CO}_2 + \text{H}_2\text{O} + \text{O} + 2\text{NH}_4$$

I maintain that the *action of carbonate of ammonia is not* due to the presence of the carbonic acid in combination with the base, but *is dependent on the absorption of free ammonia while the salt is chemically combining with the hydrochloric acid of the gastric juice.* The instability of the compound which renders it so susceptible of digestion is the quality that ranks it above all other ammoniacal salts.

In support of this *fact* I offer the observations drawn from forty-nine distinct experiments, of which representatives have already been cited.

1st. Carbonate of ammonia, administered by the rectum, cellular tissue, and intestine, is almost completely robbed of its stimulating properties.

2d. By the stomach it acts with great power when we permit the full play of the acid gastric juice; the converse being apparent when we neutralize the acid of the gastric juice.

3d. That the ultimate results of the chemical union is a product totally different in power and latitude of action from carbonate of ammonia.

Analyses of blood made soon after the exhibition of a dose of carbonate of ammonia show an excess of free ammonia.

The details of the analyses are so complex and tedious that I omit them.

Evidences of Stimulation.—Of late years particular stress has been laid on the selective action of stimulants upon the respiratory and cardiac centres; and, in truth, the support of these being the chief objects of stimulant treatment, a study of their relation to drugs is not only logical, but of palpable value. As the pronounced stimulation of the respiratory centre has been long known and utilized, I refrain from remarks, further than to confirm such phenomena as constant and reliable.

In reference to the cardiac centre I believe that its stimulation is more decisive than commonly credited. For illustration, I refer to my experiment hitherto detailed. The effects are clearly divided into two stages. Primarily, the heart appears transiently embarrassed, the pulse is rapid, weak, and irregular. Following hard in its footsteps is the deeper more permanent and valuable action. The pulse becomes full and strong, and regular and slow; the irritable and irregular action subsides into a regular rhythmical discharge of force. The cardiac centre is awakened to exaggerated sensibilities, and the controlling nerve force strengthened.

In twenty experiments I excised the heart from the body, and suspended it in a lukewarm solution of glycerine and water. The results were varied in the duration of the contractility, yet constant in the exhibition of marked irritability.

For convenience of comparison I tabulate my results:—

Number of experiments.	Duration of contractility after death.
1	5½ hours.
4	4 “
7	3½ “
4	3 “
2	2 “
1	2¼ “
1	1½ “

Average duration of contractility $3\frac{3}{10}$ hours.

The intensity of the irritability *pari passu* with stimulation cannot be as well portrayed to the mind in words as by the eye from Nature's own vivid picture.

Practical Deductions.—The acid gastric juice being the charm, as it were, that loosens the secret powers of carbonate of ammonia, its practical applications are necessarily fettered to the class of maladies in which the gastric functions are but slightly affected. In many forms of acute disease this condition obtains. In its graver types, in which stimulants are required, the system seems to be menaced by the sheer diversion of the vital energies, by the destruction of the systemic equilibrium. The system contains adequate force to retain life and overcome the disease, but it is wanting in the remote quality of exercising it—that quality that we commonly promote by the use of stimulants. Here we have the typical indication for carbonate of ammonia: unimpaired or slightly deteriorated gastric function, failing cardiac and respiratory action, impaired distribution of energy—here the drug will promote the rapid, powerful, and selective regulation of nerve force.

Unlike alcohol, it supplies nothing, *i. e.*, has no nutrient value, its service is comparable to the good overseer to willing subjects, who directs their labours and departs, leaving behind a deep and lasting impression.

In most chronic diseases and in acute disease of long duration, partaking of the typhoidal type, carbonate of ammonia is of no value. The gastric secretions are generally scanty and altered, hence incapable to perform the compulsory act of digestion, and if perchance enough acid were secreted, the remedy would be of little service, for the specific indications for its use are absent. The distributing force is not at fault, there is no surplus of latent energy, the cardiac and respiratory centres are not at discord with this reserve force—no, they are acting to its extreme capacity, the whole circumference of the vitality is worn almost to destruction; support, food is demanded, the vital forces must be cherished.

Plainly carbonate of ammonia would not be remedial; instead of conserving vitality it would lay to waste the fading glow of life, and lead the economy with quicker pace toward the ultimate doom of life—death.

The digestive changes proclaimed by my experiments, instead of involving new principles in the therapy of the drug, appeal to experience for further support, and place its therapeutic indication upon rational and palpable factors. Dr. Gerhard, after an extensive experience in the treatment of epidemic typhus by this drug, in 1836, wrote, in the *American Journal of the Medical Sciences*,¹ that "although we are perfectly aware of its powers as a rapid and effectual stimulant, particularly when the fever is complicated with a disease of the respiratory organs, we were rather disappointed in its effects. It was irregular in its action, and in the dull muttering of delirium of typhus seemed totally without power." This is the reflected experience of every close observer.

I repeat, in the low adynamic states, when the stomach is largely impaired, carbonate of ammonia is "totally without power." The complications of fever, in which the efficacy of the drug is vaunted, occurred at the onset of the disease, or before the stomach was seriously deranged. In consequence of the powerful stimulant properties exhibited in the healthy man, the drug has been too largely applied with the final result overriding the specific indications and a perfect ignoring of the manner of perfecting the phenomena.

Empirical observation in the recognition of the good and harmful influences, the short duration of the effects, and the increased exhalation of ammonia following its administration, has somewhat militated against error and vaguely pointed toward the true physiological process. But as these important instructions have been scattered and their importance neglected, even in the bulk of our standard text-books, an improper use of this valuable drug is still extensively exercised.

In conclusion, I therefore submit the exploded digestive changes (which seem as firmly rooted in experience as in experiment) to be the explanation of its mode of action and the reliable data to govern its administration.

ARTICLE XV.

CASE OF SUPPOSED SPONTANEOUS ANEURISM OF THE POSTERIOR TIBIAL ARTERY. LIGATURE OF FEMORAL. INCISION INTO SAC ONE MONTH AFTER, FOLLOWED BY SERIOUS HEMORRHAGE. AMPUTATION THROUGH THE THIGH. RECOVERY. ALSO, A RÉSUMÉ OF THE LITERATURE OF THE SUBJECT. By R. A. KINLOCH, M.D., Professor of Surgery in the Medical College of the State of South Carolina, Charleston, S. C. (Read at meeting of the Amer. Surg. Association, Sept. 1881.)

CASE.—J. W. R., white, adult, aged 45, coming to me from the interior of the State, was placed in the surgical ward of the City Hospital on the 20th of June, 1880. On examination he presented a disease of left leg, the limb being so large posteriorly from knee to ankle as to give the

¹ Vol. xx. page 320.

appearance of an enormous tumour springing from the posterior surface of the bones. There was besides much general œdema of the member. The limb was semi-flexed, quite warm to the touch, and very painful. The following were the dimensions of the leg below the knee: Greatest circumference $22\frac{3}{4}$ inches; circumference close to popliteal space 19 inches; diameter near ankle $14\frac{1}{4}$ inches; normal leg, greatest circumference 15 inches.

There was no history of injury to part. The only recollection of any accident suggesting traumatism was of having been thrown from a wagon six or more years ago. There was no injury to limb at that time. Three years ago trouble with the leg began, without known provocation, in the form of a "small hard lump," in the upper portion of the calf. This increased very slowly, and had at one time, he thought, some pulsation.

The great and rapid development had been during the last seven months. The helplessness and pain of the limb had induced him finally to seek advice. At the suggestion of Dr. Johnson, of Wallhalla, he had come to Charleston to be under my care. Dr. Johnson had not watched the case for any time, but six months previously he had attended the man for an erysipelatous condition of the leg threatening suppuration, and subsequently he regarded the disease as aneurismal, and treated it with bandage and tourniquet without result. There remained some doubt in his mind as to correctness of diagnosis.

Tumour was semi-solid, elastic and indistinctly fluctuating to the touch, smooth, not lobulated. The tegumentary surface was congested and of a dusky bluish colour. There were large subcutaneous veins distinctly visible stretching across the swelling. There was apparently no diminution of the swelling upon direct pressure, nor was the tumour influenced by interrupting the flow of blood through the femoral artery. There was no pulsation, but when the palms of the hands were made to bear firmly upon a large extent of surface at about the region of the greatest circumference of the limb, a slight upheaving, or rather an excentric movement of the mass, was recognized. This was not perceived when the flow through the femoral was cut off by pressure at the groin. There was no *bruit*, that I could discover, although, one of my young friends thought that he recognized such. There was a trifling enlargement of some of the lymphatic glands in the groin of the affected side. The appearance of patient was healthy; body spare; countenance indicating care and suffering; there was nothing expressive of so-called malignant cachexia. He slept badly at night because of pain in the limb; his appetite was defective; his pulse quickened.

Diagnosis.—Aneurism most probably of posterior tibial artery, or possibly of lower portion of popliteal, recently become diffusive or false, sac filled with fibrin and coagula. Many of my medical friends examined the case, and the majority of them entertained serious doubts as to the correctness of this diagnosis. Opinions varied as to the existence of an encephaloid, a sarcomatous growth, a pulsating tumour of bone, etc. The time the tumour had existed, its mode of early development, its recent sudden and rapid progress, its uniform smooth surface, the excentric swelling upon removal of pressure, the character of the pain complained of, and the general condition of patient, induced confidence in my own opinion, but I could not forget how often surgeons more experienced and more capable than myself had, under similar circumstances, been led into

error. The rarity of *spontaneous* aneurism in the arteries of the leg was a strong argument, with some, against the conclusion I had reached.

In view of the suffering of the patient, and the size and condition of the supposed sac, believed to be filled with coagulum, I thought the ligation of the femoral was the most promising operation. After the ligation, I proposed to aspirate the tumour with the object of confirming the diagnosis.

Operation. Jan. 23d, 12 M. I ligated the femoral below the apex of Scarpa's triangle. Intending to use the antiseptic catgut ligature, I was at the required moment much disappointed in failing to procure a proper article; I therefore employed carbolized silk, and, as commonly done, retained one end of the thread, with which to remove the loop after the ligature had cut through the vessel. For the first time in my own experience and observation in the ligation of the femoral in the continuity, I experienced an unexpected trouble from hemorrhage. Just as I passed the needle under the vessel, there came a sudden and free gush of blood. I perceived that the bleeding was arterial, and yet could scarcely believe I had injured the main vessel either with the knife or needle. The flow was soon controlled by the finger, and by an assistant pressing the femoral at the groin. I then discovered that the hemorrhage came from a branch of the main vessel, which had been ruptured in passing the needle. This vessel I secured, then tied the main ligature to the femoral immediately below the small branch. It may be interesting to remark that this accident is alluded to by the late Mr. Syme, of Edinburgh, so well known by his brilliant operations in connection with aneurismal disease. He is the only author, as far as I am aware, who mentions the fact. He says, when describing the operation on the femoral in the first edition of his *Principles of Surgery*: "The needle, though introduced with care and dexterity, sometimes occasions a pretty copious flow of blood, which fills the wound almost as rapidly as it is wiped out, but ceases upon the ligature being tied, and probably depending upon the injury of a small branch happening to come off at the part." The wound was closed by four silver wire sutures and dressed with carbolized lint, and a compress of cotton. I now aspirated the tumour, but failed to extract any more than a little bloody serum. The aspirating tube was delicate, and allowed of no free escape of the contents of the sac. The curiosity on the matter of diagnosis was thus not satisfied. Patient was put to bed and given an anodyne. The limb was wrapped in several layers of cotton wadding.

Omitting the details of my clinical notes for several days, I will only state, that the operation at once afforded some relief to the tension of the tumour, but patient was restless and slept badly after the second day.

25th. There was quite a rise in temperature (104° to 106°), and I felt that the wound could not be doing well.

26th. Removed dressing and discovered a circumscribed ovoid mulberry-coloured spot, two inches long by one wide, just below and a little to the outside of the wound made for ligating the femoral; also evidences of cellulitis extending from this point over an area of several inches to the outer and lower aspect of the thigh. There was evidently beginning gangrenous action. To meet this I made two free incisions through the diseased structures, and gave exit to a spoonful or two of putrescent fluid and some offensive gas. The lowest suture holding the wound was cut and removed, and a director introduced from this point towards the incisions just made to the outer and lower side of the thigh. Some more

offensive pus was thus liberated. After a thorough cleansing and disinfecting of the part with carbolized water, the carbolized oil dressing was reapplied. Patient was ordered quiniæ sulph. $\mathfrak{z}\text{j}$, opii gr. ij , twice a day. Diet, milk and bread, brandy $\mathfrak{z}\text{j}$, three times a day. Wound to be dressed twice a day. Greatest circumference of limb $21\frac{1}{2}$ inches.

Feb. 1st. Patient's condition has improved. The temperature is now normal, appetite has returned, the gangrenous tissues have separated, and the cellulitis seems arrested. The greatest circumference of limb was now $20\frac{1}{2}$ inches. The general treatment had been by quinine and opium with an occasional cathartic, nutritious diet, and a moderate amount of brandy.

12th. Had continued to improve. The tumour presented about the same appearance, but the subsidence of the general œdema of the limb was more marked. I was surprised this day by a condition first discovered by one of my medical friends, who had looked in at the case, which seemed to indicate a *destruction of a portion of the inner edge of the tibia*, about three inches below the tuberosity. Through the tegumentary covering we recognized, what we believed to be, loss of substance, and there was seemingly a crescentic sharply defined excavation of the bone, one and a half inches in length. Upon slight pressure particles of bony tissue appeared to yield under the finger. I was startled by this phenomenon, and the faith in my diagnosis a little shaken. Many medical friends examined the limb, and all agreed that the bony tissue had undergone destructive absorption in connection with the growth of the tumour. Some saw in this additional support to the idea of a sarcoma, or a cancerous disease of the bone; others now regarded the case as one of osteo-aneurism. A few thought that the pressure of an aneurism proper would explain the destruction of the osseous tissue, just as has been noticed in connection with internal aneurism encroaching on the spinal column. I could scarcely believe that the pressure of an aneurism originating behind the tibia, could be sufficient to destroy the bone while the soft tissues behind the leg had yielded so freely to the growth of the tumour; nor could I understand, why, if such were the case, the inner edge merely of the bone should be destroyed, and in so restricted and precise a manner.

13th. The ligature came away this A. M. without hemorrhage. Patient's condition good. Measurement showed, however, no further diminution in size of tumour other than what might be experienced by the subsidence of the general œdema.

24th. (One month after operation.) Patient's condition unchanged. He was quite anxious to return home into the country. Consultation was held with several of my colleagues, and it was thought advisable, before consenting to patient's departure, to explore the tumour by an incision and clear up the question of diagnosis. In the event of the case being a sarcoma, or other tumour strictly of the bone, we proposed to amputate through the thigh. *If* the diagnosis of aneurism was sustained, we hoped to find the artery secure, when we could risk emptying the sac and treat this antiseptically. If the artery was permeable, we would secure it by means of a double ligature, or amputate through the thigh as a *dernier ressort*. Patient was chloroformed. I punctured the tumour close to the inner side of the tibia, and passed my index finger into the opening. There was no hemorrhage. I then enlarged the wound sufficiently to turn out the greater portion of the contents of the tumour. The aneurismal character of the disease was thus determined. I proceeded to break up and turn out the remaining layers of fibrin and blood clot. Upon feeling

for the crescentic-shaped ulceration of the tibia above described, I was amazed to find *the bone intact and smooth*. The apparent change in its structure was explained by the location, and the yielding upon pressure of the dense fibrinous layers and coagulum. The soft tissues forming the sac were thinner and softer at the point where we had imagined the bone absorbed. The tumour had evidently tended to point at this region, and the fibrinous deposit adhering closely to the inner border of the tibia, above and below the spot, had led us into error in regard to the condition of the bone. I had almost emptied the aneurismal sac, and had syringed out the immense cavity several times with carbolized water, preparatory to introducing a drainage-tube and adjusting a compress and bandage, when suddenly there came a fearful gush of arterial blood. In an instant the cavity filled. I ran my hand quickly into the sac and pressed the deeper tissue against the posterior face of the tibia, and at the same time called an assistant to press the femoral at the groin. The fearful flow was thus arrested. Carefully withdrawing my hand, I found that the pressure of the femoral commanded the bleeding. I now enlarged the opening into the sac, and endeavoured to find the point where the artery communicated. The adherent layers of fibrin and clot rendered my search futile, and I was convinced that to secure the vessel at all it could only be by ligatures *en masse*, which might include other important structures, and, most likely, *not* succeed in obliteration of the vessel, because of the sup-puration and gangrenous action to be subsequently encountered. A hasty consultation was held, and amputation determined on. This I practised close above the knee. Patient recovered rapidly.

April 5th. He was discharged from the hospital and returned home in good health.

Dissection (by Dr. Edw. P. Rose) proved the case to be an *aneurism* of the posterior tibial, about two inches below its origin. The artery was pervious both above and below the opening into the sac. It had been fed by collateral vessels entering the femoral below the point of ligature. The opening of the sac and the detachment of the clots and fibrinous layers had occasioned the hemorrhage.

Remarks.—The rarity of spontaneous aneurism of the vessels of the leg is well known to the profession, and readily accounted for by the size and location, together with the anatomical and physiological peculiarities of these vessels. Crisp, in his tables of 501 aneurisms, reports but two cases of aneurism of the posterior tibial. Norris, in his tables showing mortality of the ligature of the femoral, records three cases, and one of these is found in Crisp's tables. Dr. D. H. Agnew, in his recent work on surgery, alludes to having seen one case in Philadelphia in 1875, in the practice of Dr. De Forest Willard. I do not propose to go further into the opinions or experience of authorities, ancient or modern, but will record at the end of this article all of the cases of this disease I have been able to find in the limited field of research to which I have had access. But here I beg to say that I use the term *spontaneous* aneurism with some hesitancy, and simply to imply that in the cases reported there is a want of reasonable proof of origin from traumatism. I have admitted a few cases into the table with a supposed traumatic origin because I regarded

the proof of such origin insufficient and thought it best to reserve judgment. Moreover, I recognize the fact that, upon a close investigation of the history of all the admitted spontaneous or true aneurisms of the larger arteries, there is frequently found attached to this some antecedent blow or some undue exertion. Perhaps, in the strictest pathological sense, there is never a spontaneous aneurism of the posterior tibial. But practically we must take a different view of the matter.

The differential diagnosis between aneurism and other tumours, including diseased conditions of the bones, has frequently puzzled the best surgeons. In this case, perhaps, the uncertainty of diagnosis, when patient came into my hands, was as striking as in any case upon record. The deception arising from the peculiar relation of the fibrinous layers and blood clot to the border of the tibia was singularly interesting. And, lastly, the question as to the treatment pursued may be considered as a very debatable one. I regarded ligation as the promptest means for relieving the patient of his suffering. Pressure had been tried, and now its promise was too uncertain; its attendant pain or discomfort not likely to be borne. The ligation of the femoral I deemed worthy of trial, but I did not feel sanguine of its success. It was practised somewhat as an experimental procedure, and only because of the condition of the sac, as resulting from the length of time the disease had existed. The double ligature to the posterior tibial itself would have been the most thoroughly surgical operation, but in the state of the limb this could hardly have been accomplished, and most certainly not without opening the sac. Had the case been seen in its development, the double ligature of the artery would have been preferred to the Hunterian operation on the femoral.

Opening the sac I was opposed to as a primary operation. As a general rule too, surgeons are agreed upon not opening the sac after the use of the ligature. I ventured, for reasons given above, to depart from this rule a month after I had applied the ligature. The question may be asked if this practice did not cost the man his limb? Or if a cure would have resulted had the sac not been interfered with? I incline to the belief that there would have been no cure; that the full establishment of the collateral circulation would have brought renewed trouble and progressive disease. The dissection proved that the artery was pervious above and below the sac, and that it received abundant supply of blood. It was but a matter of time when there would have been demanded either amputation or the old operation of Antyllus.

Cases of Spontaneous Aneurism of the Posterior Tibial Artery.

No.	Date.	Sex and age.	Authority.	Reporter.	Treatment.	Result.	Remarks.
1	Feb. 1816	..	Med. Chir. Trans., vol. vii. (Norris)	Travers	Ligature of femoral.	Death on 7th day.	Ligature separated on fifth day, and patient died of <i>hemorrhage</i> on the 7th day.
2	Aug. 1817	Male, 27	Dub. Journ. M. & C. Sci., 1835-6, viii. p. 241.	Browne	Ligature of femoral; 2 ligatures used.	Death 41st day.	Formation of sinus along course of the sartorius muscle.
3	Aug. 1830	Male, 59	New York Med. Jour., 1830-1, i. p. 260.	Post	Amputation of thigh.	Death 7th Sept.	Dr. Cheeseman, operator; mortification of foot Aug. 20.
4	Nov. 1830	Male, 49	Med. Gaz. Lond., 1831, viii. p. 635.	Key	Ligature of femoral.	Gangrene; death.	
5	Sept. 1832	..	South's Trans. of Chelius, vol. ii. p. 543.	Green	Ligature of femoral.	Cured.	Had a fall down stairs 12 mos. previous; pulsation of leg noticed 6 months after this, and posterior tibial did not pulsate at the ankle. This may, with doubtful propriety, be classed as <i>spontaneous aneurism</i> . Ligature separated on 39th day. Two months after operation the leg had only diminished an inch in circumference.
6	1833	..	Prov. Med. and Surg. Jour., 1833 (Crisp's Table).	Tyrell	Ligature of femoral.	Cured.	
7	Jan. 1839	Male, 48	J. Sec. Sci. Med. de Lisbon, 1839, ix. 21.	Perelra	Amputation	Recovery.	
8	Aug. 1847	Male, 33	Monthly Jour. Med. Sci., 1852, xiv. p. 368.	MacKenzie	Aneurism laid open and ligature applied above and below sac.	Cured.	Six months after operation, limb was a little curved.
9	Feb. 1851	Male, 34	Virginia Med. and Surg. Jour., 1853, i. p. 361.	Gibson	Compression by bandaging and tourniquet over the popliteal artery; limb on inclined plane.	Cured (May 9th left hospital apparently well; but leg a little stiff).	Only cause ascribed, standing in one position a long time with muscles fixed.
10	June 1852	Male, 40	New York Med. Times, 1852, i. p. 233.	Markoe	Ligature of femoral.	Death 38 days after operation.	Suppuration of sac, and peritonitis.
11	Jan. 1854	Male, 27	Tr. Path. Soc. Lond., 1853-4, vol. iii. 115.	Walton	Ligature of femoral.	Death.	May have been due to over-exertion in pushing; but he had serious disease of the <i>aortic valves</i> , which caused death.
12	Jan. 1855	Male	Bull. Soc. de Chir. de Paris, 1859, ix. p. 258.	Lagout	Ligature of femoral.	Cured; ankylosed knee and semi-flexed leg one year after.	Operator, M. Fleury. Supposed to be due to unusual exertion in pulling on boot. This not established however.
13	Aug. 1871	Male, 32	Brit. Med. Jour., 1872, i. p. 101.	Curgeven	Tourniquet over femoral; elastic collodion over tumour.	Cured.	Swelling came on gradually in calf of leg four months before admission.

No.	Date.	Sex and age.	Authority.	Reporter.	Treatment.	Result.	Remarks.
14	May 1872	Male, 40	Sperimen- tale Firenze 1874, xxxi. p. 345.	Landi	Compression; injection of ergotin to tumour; ligature of femoral June 13; amputation	Death Aug. 26	
15	Nov. 1872	Male, 30	Lancet, Lond., 1873, ii. p. 301.	Stockwell	Tourniquet to femoral and popliteal.	Cured.	Attributed to stooping.
16	Dec. 1872	Male, 31	Lancet, Lond., 1873, ii. p. 809.	Shane	Compression and ligature to femoral; gangrene; amputation	Recovery	Left hospital July 22, 1873, with good stump; no heart disease. Supposed stamping with foot caused disease.
17	1873	Male, 19	Dnb. Jour. Med. Sci., June 1, 1877, vol. lxiii.	Richardson	Digital compression 154 hours, and then instrumental compression 115 days before cessation of pulsation.	Cured.	This patient had had a swelled leg and pain in sole of foot for two years previous. Twelve months before admission to hospital had been kicked on tuberosity of right tibia. Only ten weeks before pain began unaccountably in right leg and foot, followed by swelling at seat of disease.
18	April 1874	Male, 24	Lignria Med. Genoa, 1874, xiv. p. 401.	Arata	Compression; ligature of femoral	Partial cure of right tibial tumour.	Ant. and post. tibial involved —two tumours. Case not reported as finished.
19	July 1875	Male, 66	Phil. Med. Times, 1874-5, v. p. 521.	Willard	Pressure on femoral in Searpa's triangle.	.....	Case of fusiform aneurism of ant. and post. tibial. Aneurism cured, but patient had kidney disease, which was progressing to a fatal termination.
20	1875	Male, 63	Med. Rec., N. Y., 1875, xliii. p. 318.	Crin	Compression with Esmarch's bandage.	Cured.	Five weeks after.
21	1880	Male,	Brit. Med. Jour. Lond. 1880, i. 126.	McSwiney	Laid open by mistake; attempt to tie artery; amputation	Recovery	
22	1880	Male, 45	Trans Am. Surg. Soc.	Kinloch	Ligature of femoral; subsequent opening of sac 30 days afterward; hemorrhage; amputation through thigh.	Recovery	In the early period of the disease had been treated by bandaging and the tourniquet without good result.

Besides the above cases we notice that Mr. Erichsen, in his *Surgery*, 5th English edition, vol. II. p. 119, alludes to a preparation of a «small aneurism of the posterior tibial in the Museum of St. George's Hospital. Prof. S. D. Gross, in his treatise on *Surgery*, vol. i. p. 793, refers to a case of aneurism of the same artery as recorded by Sir Astley Cooper.

ARTICLE XVI.

A DEFENCE OF THE CÆSAREAN STATISTICS OF AMERICA. By ROBERT P. HARRIS, A.M., M.D., of Philadelphia.

IN the *Medical Times and Gazette* of April 8th, 1882, under the head of "Porro's Operation," are the following editorial remarks, page 359: "The risk of Cæsarean section is very great. Statistics are quite misleading, from the tendency of operators to publish a case if successful, but try and forget it if fatal." . . . "Dr. Harris, of Philadelphia, has got together a number of cases, from which he represents the mortality as being only twenty-five per cent., a conclusion evidently affected by the fallacy to which we have alluded."

Remarks of the same import having been repeatedly made at home and abroad, editorially, in medical societies, and to me by letter, it becomes me to set the matter at rest by a few words of explanation. It is true that operators are often inclined to keep their unsuccessful cases out of print; but that does not prevent their being obtained, if the statistical hunter is sufficiently persevering, and not easily discouraged by the amount of time and labour required. As an offset to this, it is equally true, that some of the most encouraging Cæsarean cases here and in Great Britain were withheld from publication by their operators, and not obtained until after their death. There are two ways of collecting statistics. The common and easy one is to search all the published records in books and journals, and tabulate the cases; setting down the percentage of success as an evidence of the relative standing of the particular operation in question. The other plan is to begin the real work of collecting just here, and to make a persevering search, if it takes years to accomplish it, after the unrecorded cases of the country, without the least regard to their success or failure. Many of my correspondents will bear me out in the claim, that I have made as persevering searches after fatal cases, as I have ever made after those that were the contrary. My work commenced in 1869, and I may say that in twelve years, the whole United States were very thoroughly searched over; as evidenced by the fact, that 55 unpublished cases were obtained, as an addition to 69 published ones. Had I stopped with the 69 I should have shown a mortality of only $46\frac{1}{2}$ per cent.; but the addition increased the mortality to a fraction above 57 per cent. As the record for the United States now stands, we have saved 53 out of 124 cases. The 55 unpublished cases, although adding largely to the percentage of deaths, were by no means as fatal as might have been presumed; for 16 of them recovered, or as many as were saved out of the first 100 in Radford's statistics of Great Britain.

I have never claimed that we had had a mortality of only 25 per cent. This I presume has been founded upon a statement to the effect that but

28 of the 124 operations had been performed in good season ; rated by the time in labour, and the condition of the woman when operated upon ; and that 21, or 75 per cent. of the operations, resulted in safety to the mothers. Of the 28 children, 23 were delivered alive, of whom 4 lived but a short time ; leaving 21 mothers and 19 children as the results of 28 *early* or *timely* gastro-hysterotomies.

To sum up, we have had 124 Cæsarean operations in the United States, 7 in the West Indies, and 1 in Mexico, with 60 women saved, or $45\frac{5}{11}$ per cent. in North America.

It has been a great surprise to many, who were inclined to overrate the dangers of the Cæsarean operation in the United States, to find that even the unrecorded cases presented a recovery percentage of $29\frac{1}{11}$. It is a very simple matter to deery statistics, on the ground that "all good cases are reported, and bad ones withheld;" but such a guess has not been sustained by the facts, as shown in this record. Conscience of entire honesty in my searches after the truth, it is not very pleasant to hear remarks, which indicate a want of confidence in the thoroughness of the work as presented. I know that in tracing rumored operations to get the truth, I have rejected a large number ; that from one to five years have been expended over some cases ; and that those retained have ample evidence of reliability. My only regret is, that the corresponding work in other countries has not been done in the same manner.

The claim has been made recently, by one of our own writers, that European operators are more inclined than Americans to publish their cases. This may be true in a measure as to the present, and in particular as to Great Britain, where weekly journals are in active search for medical intelligence ; but personal experience leads me to a very different opinion as to the past, and particularly in regard to some of the continental countries. As to England herself, I have only to cite the fact that notwithstanding the Cæsarean searches made and published on three several occasions by the late Dr. Thomas Radford, of Manchester, he failed to secure the only case in his country in which the operation had been performed twice upon the same woman, although the parties resided in Sheffield, thirty-five miles distant. Had Dr. Radford sought out unrecorded cases, as I have done, through correspondents, instead of by notices in journals, he would hardly have failed to learn of the operations by the late Mr. Henry Jackson and his son. There is this difference between Dr. Radford's "*communicated*" cases and mine. His, with very few exceptions, were on the eve of publication, and mine were chiefly old lost cases, or such as there was no intention of ever reporting. Of the 55 unpublished cases, 13 were obtained after the deaths of the operators, and 9 through other physicians, either present or having knowledge of the operations.

REVIEWS.

ART. XVII.—*Etude du Processus Histologique des Néphrites*. Par la Dr. CH. HORTOLÈS, Interne des Hopitaux de Lyon, etc. 8vo, pp. 182. Paris : J. B. Bailliere et Fils, 1881.

SINCE the great work of Rayer, the contributions of French writers to the pathology of Bright's disease, have not been of great importance. In France, of late years, few, if any, studies upon this subject have appeared equal in value to those of Johnson, Dickinson, Grainger Stewart, Wilks, and Gull and Sutton among English writers, and of Virchow, Reinhardt, Frerichs, Bartels, and Weigert among German writers.

The work of Hortolès treats of the histological changes met with in acute and chronic nephritis, particularly in the different forms of Bright's disease. His investigations were conducted under Renaut's direction in the laboratory of general anatomy in the medical school at Lyons. They are, therefore, in the spirit of the modern French school of histology, which owes its excellent methods and results in greatest part to Ranvier. Hortolès work, however, suffers from a defect only too commonly met with in French scientific productions, namely, ignorance of results obtained in the same field of study by investigators in other countries. It is owing to this reproach that in some instances the author puts forward as discoveries facts already established, and, on the other hand, sometimes treats slightly or not at all important points in controversy. His work, however, is valuable as it embodies original and careful investigations upon a most important subject. It treats professedly only of the histological details of the lesions produced in inflamed kidneys, and does not discuss from a general point of view the pathological anatomy of Bright's disease. The careful histological study of the renal lesions of Bright's disease has led Hortolès, as well as many other recent observers, to the view that the current classifications of this disease are based upon erroneous pathological conceptions. This relates more particularly to the sharp distinction usually drawn between the parenchymatous and the interstitial forms of Bright's disease, and to the propriety of regarding purely parenchymatous changes as inflammatory.

After a brief introductory chapter devoted chiefly to a historical review of the divergent views, relating to the nature and extent of the interstitial and parenchymatous changes in nephritis, the writer gives the results of his studies upon certain disputed points in the *normal histology* of the kidneys. Taking up first the structure of the glomeruli, he notes that in the simplest forms of kidney, as in the lamprey, there exists fully developed fibrillated connective tissue between the glomerular capillaries, and that the whole glomerulus is surrounded by a layer of endothelial cells. In man he regards the cells which lie over and between the capillaries of the glomerulus as connective-tissue cells, and as all that remains of the fully-developed connective tissue found in the glomeruli of the lamprey.

These cells are thin and branching, and comparable to similar cells found around capillaries in other parts of the body (couche ramuscule perivasculaire of Renaut). The epithelium which covers the glomerulus in early foetal life is not found after birth. The author is at much pains to show that the walls of the capillaries in the glomerulus do not present the usual endothelial markings after injecting them with nitrate of silver, a fact which had previously been established. Hortolès is unable to demonstrate the existence of lymphatic vessels or of lymph-spaces, lined by endothelium, in the parenchyma of the kidney. He notes the presence of a single layer of smooth muscular fibres around the efferent vessel of the glomerulus, and signalizes the absence of any muscular coat in the interlobular veins. Adducing Heidenhain's observations, he calls attention to the highly differentiated character of the epithelium lining the convoluted tubes, which, like other highly organized cells, such as nerve-cells, muscle-fibres, etc., responds to the action of inflammatory irritants, not by proliferation, but by degeneration and death. He believes that Cornil has falsely interpreted the hyaline drops (sarcodic excrescences), which often exude from these cells after death, as evidence that they give origin to the material of hyaline casts.

Hortolès describes three forms of *acute inflammation* of the kidneys. To these he gives the names, acute congestive œdema of the kidney or congestive nephritis, phlegmonous œdema of the kidney or phlegmonous nephritis, and acute catarrhal œdema of the kidney or mixed catarrhal nephritis. This application of the term œdema to various forms of inflammation is contrary to English, and, in fact, to general usage, and cannot be considered a happy choice. Indeed, many of the expressions and views which the author emits from place to place concerning inflammation in general are singularly crude. Thus, in the process which he calls acute-congestive œdema, he says that emigration of white blood-corpuscles does not constitute inflammation unless the fixed cells proliferate, this latter change only distinguishing the process from passive œdema. In true congestive inflammations the walls of the vessels must soften and give rise to a genuine hemorrhage! In phlegmonous inflammations the embryonic cells finally "die and are transformed into pus globules!" Emigration of white blood-corpuscles he refers to increased blood-pressure.

The type of acute congestive œdema of the kidney is *scarlatinal nephritis*. The main element in this process is emigration of white blood-corpuscles from the intertubular capillaries. Hortolès, therefore, is in harmony with many recent observers in considering scarlatinal nephritis rather as interstitial than as parenchymatous nephritis. The following are among the noteworthy features in his description of the pathological histology of scarlatinal nephritis. The emigration begins in the periphery of the renal lobules and gradually extends to the medullary ray in the centre. No emigration takes place from the capillaries of the glomeruli as their peculiar structure does not permit it. The albumen and blood-corpuscles which appear in the urine are derived from the capillaries between the tubes, particularly between the collecting tubes, and not from the glomeruli. White blood-corpuscles accumulate within the capillaries of the glomeruli and obstruct the circulation in them, thus causing diminished secretion of urine. This accumulation of white blood-corpuscles was mistaken by Klebs for an increase of intercapillary nuclei, and therefore interpreted by him as a true glomerulitis, which does not occur. Casts are rarely found in the tubes. The epithelium of the tubes rarely under-

goes any marked change, there being at the most a moderate swelling and increased cloudiness of the capsular epithelium and epithelium of the convoluted tubes. The scanty connective-tissue cells between the straight tubes swell up, become granular and proliferate. The usual termination of the process is in resolution, which occurs with great ease and rapidity, the embryonic cells being rapidly swept out of the kidney by the lymph-current. Exceptionally the termination is in chronic nephritis, in which case the young cells give origin to connective tissue, and many glomeruli become obliterated.

It cannot be said that Hortolès establishes all of these points. Particularly unsatisfactory is his treatment of the changes in the glomeruli in this, as well as in the other forms of nephritis. He seems to be acquainted only with the older observations of Klebs, and to be ignorant of the more recent interesting studies of Langhans and Ribbert upon glomerulitis. He in no way proves that albumen does not escape from the glomerular capillaries in scarlatinal nephritis.

Phlegmonous nephritis and the renal changes in *leucocythæmia* are described chiefly in order to contrast the behaviour of the emigrated white blood-corpuscles in these conditions with that in congestive nephritis. Phlegmonous nephritis is distinguishable from congestive nephritis by the circumscribed character of the inflammation, by the exudation of fibrin, and by suppuration. In leucocythæmia the exuded white corpuscles become separated from each other by the development of a reticulated stroma.

The next form of acute nephritis considered is *mixed catarrhal nephritis*, the type of which is the renal inflammation which sometimes occurs in the second and third weeks of typhoid fever. The histological elements which characterize this form of nephritis are, *a*, desquamation and proliferation of the epithelium of the collecting tubes and of the tubes of Henle (catarrh of the tubes), *b*, swelling, granular degeneration, and loss of nuclei of the epithelium of the convoluted tubes, *c*, a moderate emigration of white blood-corpuscles in the periphery of the lobules, *d*, an abundant exudation of an albuminous fluid from the glomeruli, which fills the tubes, escapes into the intertubular spaces, and is often absorbed by the veins. Three kinds of casts are met with in the urine. The hyaline casts result from coagulation within the tubes of the albuminous fluid which exudes from the glomeruli. The nucleated epithelial casts are indicative of catarrh of the straight tubes of whose desquamated epithelium they are formed. The granular casts (which may become fatty by action of the urine on the granular material) are derived from the degenerated granular cells of the convoluted tubes. The changes in the epithelium of the convoluted tubes, to which changes the name parenchymatous inflammation has hitherto been applied, are purely degenerative, and not inflammatory. "The term parenchymatous nephritis should be banished from pathologico-anatomical nomenclature," says our author. Especial emphasis is laid upon the abundant exudation from the glomeruli of an albuminous material, which coagulates in a hyaline form within Bowman's capsules, in and between the tubes, and within the veins. This albuminous œdema, as the author calls it, is entirely different from congestive as well as from passive œdema. Emigration of white blood-corpuscles always occurs in this form of nephritis, but is much less in degree and extent than in scarlatinal nephritis. In this form there is no blocking up of the capillaries of the glomerulus by white blood-corpuscles. If the disease lasts two or

three weeks new connective tissue is produced. This is formed from the embryonic cells. With considerable detail is described the growth of new connective tissue in islands composed of the colloid or hyaline substance described above as resulting from the coagulation of the albumen filtered from the glomeruli. These colloid foci constitute the "myxoid points" of Renault. The embryonic cells inclosed within them become stellate and anastomose with each other, thus producing mucoid tissue, which then develops into ordinary fibrillated connective tissue. This formation of connective tissue in myxoid points occurs, not only between the tubes, but also within the tubes and within Bowman's capsules. The same process can be studied in chronic nephritis. An exaggerated form of this variety of nephritis may be called the eclamptic form. With it there is a rapid development of severe uræmic symptoms. It is characterized anatomically by an enormous exudation of the coagulable albuminous fluid from the glomeruli, so that the kidney is fairly inundated by it, and the circulation through it is checked. This form of typhoid nephritis has been described by Renault.

In criticism of Hortolès's views concerning the two forms of acute Bright's disease which he describes, it must be said that few will be inclined to accept the sharp distinctions which he draws between what he terms congestive nephritis and mixed catarrhal nephritis. The hyaline exudation in, and sometimes between, the tubes is confined to no particular form of nephritis. While it is true that in some cases epithelial changes are extensive and emigration scanty, while in others there is abundant emigration with little alteration in the epithelium, these facts cannot serve as a basis of useful classification of acute Bright's disease, for there may be every possible degree of combination as regards the relative proportion of the epithelial changes, and the emigration of white corpuscles. From the great attention which has been paid to typhoid nephritis in France, this complication of typhoid fever would seem to be more common in that country than with us, and Hortolès's observations must be considered a valuable contribution to our knowledge of its pathological histology. Concerning the development of mucoid tissue in the hyaline albuminous exudation one cannot help thinking that the peculiar shapes which wandering cells may assume in a colloid medium may have been mistaken for developing connective-tissue cells. This suspicion is increased by the assertions as to the development of this tissue in the interior of the tubes, and even in ovarian and other cysts with colloid contents.

A chapter is devoted to the consideration of the alterations which the kidneys undergo in consequence of the passive congestion resulting from heart disease. The *cardiac œdematous* kidney is the name under which these changes are embraced. They consist in catarrh of the straight tubes, in degeneration of the epithelium of the convoluted tubes, in the exudation of coagulable albuminous fluid from the glomeruli, in emigration of white blood-corpuscles, and in the new formation of mucoid and fibrillated connective tissue. The pyramidal substance is said to be more affected than the cortical. The examination of a single case has served Hortolès as the basis of his description of the changes induced by chronic passive congestion of the kidneys. His general conclusions, therefore, are unsupported by sufficient evidence, and are of little weight. A wider experience would have taught him that chronic passive congestion of the kidneys in cardiac diseases may exist for a long time without producing inflammation of these organs.

In the remaining chapters are described the lesions of *chronic nephritis*, and these are followed by a *résumé* of the general conclusions arrived at by the author. In chronic nephritis the development of new connective tissue plays an important role, although epithelial changes are never absent. Hortolès believes that the fibrous tissue of chronic nephritis is formed not out of granulation tissue, but out of mucoid tissue. A "mucoid stage" precedes the stage of fibrous atrophy of the kidney. The mucoid tissue is formed mainly by proliferation of connective-tissue cells, although emigrated white corpuscles may have some share in its production. He describes three modes of obliteration of the Malpighian tufts; *a*, by gradual thickening of the capsule of Bowman, accompanied by fatty degeneration of the glomerular capillaries; *b*, by the same thickening accompanied by hyaline or colloid exudation within the capsule, and consequent compression of the glomerulus; *c*, by the development of fibrous tissue from the cells surrounding the capillaries of the glomerulus, a true glomerulitis. Changes in the coats of the branches of the renal arteries are of predominant importance in some forms of chronic nephritis, particularly in that accompanying lead poisoning, and in that attendant upon atheroma of the arteries. These changes are thickening of the adventitia (periarteritis), and thickening of the intima (endarteritis obliterans). In the smaller arteries the thickened intima may present a hyaline appearance, and a similar hyaline transformation may occur in the capillaries of the glomerulus. Nothing is said concerning changes in the arteries in other parts of the body. The membranæ propriæ of the tubes become hypertrophied. The epithelium in those tubes which are surrounded by newly formed fibrous tissue is atrophied, but possesses nuclei which stain deeply. On the other hand, the epithelium of other tubes is swollen and often without nuclei capable of being stained. Concerning the atrophy of tubes and the formation of cysts the author has nothing new to offer. The same catarrhal and degenerative changes in the epithelium, which have been described in connection with acute nephritis, are also present in the chronic forms.

With the exception of the role assigned by Hortolès to the development of mucoid tissue, there is not much new in his account of the histological lesions of chronic nephritis, and it may well be doubted whether mucoid tissue is to be found with the constancy and to the extent described by the author.

In conclusion may be quoted his statement concerning parenchymatous and interstitial nephritis.

"If the name parenchymatous nephritis be given to the morbid process characterized by cloudy swelling of the striated epithelium, and its local death as indicated by impossibility of nuclear staining, and if, on the other hand, the name interstitial nephritis be applied to the inflammatory changes in the intertubular spaces, one can boldly assert that parenchymatous nephritis, as well as interstitial nephritis, does not exist as an isolated state, but that the two forms of lesion are always united in the same diseased kidney" (page 124).

The work is accompanied by five beautifully and faithfully executed chromo-lithographic plates, representing drawings from microscopical sections of diseased kidneys.

W. H. W.

ART. XVIII.—*Recent Works on the Diseases of Women.*

1. *Diseases of Women, including their Pathology, Causation, Symptoms, Diagnosis, and Treatment. A Manual for Students and Practitioners.* By ARTHUR W. EDIS, M.D. Lond., F.R.C.P., M.R.C.S. With One Hundred and Forty-eight Illustrations. Philadelphia: Henry C. Lea's Son & Co., 1882.
2. *A Clinical Hand-Book on the Diseases of Women.* By W. SYMINGTON BROWN, M.D., Member of the Gynecological Society of Boston, etc. New York: William Wood & Company, 1882.

THE two volumes, the titles of which are at the head of this article, stand at the opposite poles of book-making. The fact that they are upon kindred subjects, and both written for the same class of readers, serves but to illuminate the positive merits of the one, and the negative merits of the other. At the first glance, in view of the overburdened state of gynecic literature, we cannot help feeling some regret that Dr. Edis should feel obliged to write a book upon the diseases of women. But, if we are compelled to submit to the infliction of Dr. Brown's book—and we evidently cannot help ourselves—there is no better, or more welcome remedy, than a good one like that of Dr. Edis.

It is a fact, not at all unusual, that both the volumes are written for the student and junior, or general practitioner, and it certainly does not reflect credit upon the authors, that this fact is stated in an apologetic way in the prefaces. While we feel able to realize the character and age of the general practitioner—"country practitioner," Dr. Brown calls him—we must confess a doubt as to the same qualities in the student for whom the volumes are written. After reading Dr. Brown's work, it is clear as to the character of his students; but we fancy that Dr. Edis includes under that generic term, all the gynecologists, and especially all the ovariologists. It is necessary to make but one quotation to prove this. "The diagnosis of abdominal tumors being generally one of much difficulty to the student," etc. Now, we would like to know, when that period of life ceases, and the illuminated moment comes to the gynecologist when the abdominal diagnosis is easy.

The arrangement of Dr. Edis's book is logical, and naturally results from a systematic study of the parts. In this natural order we have malformations of the uterus, followed by displacements, and to the latter are given four excellent chapters. Following in the order given, we have chapters on functional disturbances in circulation of the uterus, inflammation in its various degrees and forms, benign tissue changes in uterine texture, new growths, malignant diseases. Next in order come the ovaries, to which four chapters, amounting to about one-fifth of the volume, are given. The uterine appendages, aside from the ovaries, including extra-uterine pregnancy, are next in order, followed by a consideration of the disorders of the vulva and vagina in separate chapters. Purely functional disorders, among which the author classes amenorrhœa, chlorosis, and vicarious menstruation, form a suitable close to the systematic portion of the book. The remaining part of the volume, consisting of eight chapters, is rather faulty in the grouping of subjects. In view of the elementary character of the greater part of the work, it would have given the student a more scientific idea of dysmenorrhœa, leucorrhœa, uterine hemorrhage, menorrhagia, and metrorrhagia, not to have given these symptoms

separate chapters; but considered them in connection with the diseases of which they were symptoms. Leucorrhœa and uterine hemorrhage are not diseased entities, but are symptoms merely, and must be so understood if they are to be properly treated. Whenever they are considered in a text-book, separate from their morbid antecedents, the latter is in danger of being overlooked.

Upon the subject of displacements, the author gives a striking illustration of the value of oblique facts, as Czermak calls them. The false is as good as the true, so long as it passes current. Speaking of anteversion, the author says that the "normal position of the uterus corresponds with the axis of the pelvic brim. The uterus occupies as near as possible the centre of the upper part of the pelvic cavity, being suspended between the rectum and bladder, about midway between symphysis pubis and the sacrum." Such a sentence in a new text-book designed to form the after-coming gynecological opinion and practice is enough to discourage every earnest worker. Yet, there are reasons for hope. We well remember certain other matters which have had to struggle their way through to the light. In our early battle for the intra-uterine stem, a very temperate clinical article was declined by a New York journal, because such practice was dangerous in the hands of the general practitioner in the opinion of the editor. What was then doubtful is now legitimate. The uterus never was, and never will be found in the position described by Dr. Edis as the normal. There is now a very rich literature upon this subject, and Dr. Edis, and all others, ought to inform themselves relating to it before they write upon the subject. The author uses the term congenital in relation to uterine malpositions. The best usage condemns this use of the word. The human female is not born with a uterus as we know it in the adult; in fact, it may be said not to exist. For a displacement, therefore, to be congenital is impossible. Dr. Edis's position in regard to the use and indications of the intra-uterine stem, is a sensible and practical one, and affords an excellent example to some American authors. For cervical anteversion, the plan to incise the posterior wall is advised, which we believe is not the better way to treat it. It is dangerous, and does not always cure.

In the treatment of hypertrophic elongation of the cervix, no consideration is given to telescopic elongation of the supra-vaginal neck, thus simulating true infra-vaginal elongation. Amputation is strongly advised, differing somewhat from the American method. Upon the subject of laceration of the cervix uteri, we are pleased to notice that Dr. Edis quotes Simpson with approval to the effect that this injury is not the result of mismanagement in labour. He thus sets a worthy example to many American teachers, who are satisfied with this unscientific explanation of the accident. In a concise paragraph he enumerates the various causes that may contribute to this injury, which will tend to do away with false notions regarding its causation. The after-treatment of the operation is not such as experience has taught us is necessary. Confinement in bed for ten days or two weeks, and a low diet, as well as directing the patient to pass water by turning upon her hands and knees, are uncalled-for refinements. On the contrary, the patient may be allowed to walk about her room, have a full diet, and in the case of repair of slight lacerations, she may be permitted to ride out. The moral effect of this is very great, as, in many cases, women who are in great need of the operation will refuse through dread of the confinement. The various chapters upon ute-

rine inflammation are rich in prescriptions adapted to the conditions described. Some of them are quite complicated, and have a sort of Fothergill flavour in the number of their components; their chief fault, however, is in the large number offered for the choice of the reader. It strikes us as a better plan to detail the treatment in a general way, and let the student do his own compounding. In no other way can the student be taught the thorough mastery of his remedies that will make him a skilful prescriber.

Nothing that we have ever read is better in its way and purpose than the chapters upon ovarian tumour and diagnosis of abdominal tumours. The plan of arrangement is excellent, and the matter admirably condensed, giving the reader the matter of a whole volume upon this special subject. But what drew our attention at the first glance was the very fine writing exhibited, showing that Dr. Edis possesses descriptive powers of a high order. We are tempted to give the reader the benefit of a paragraph. He is speaking of the vascular system of an ovarian cyst. "The vessels supplying the tumour enter at its base, enlarge with its growth, and ramify very freely on its inner surface. They form a complete network in and under the peritoneum; and the capillaries passing into the fibrous layer traverse it, and have a peculiar arrangement on the inside, where they form knots of anastomosis, with bulbous dilatations and terminal pouches, like, but less regular than, those found in the chorion. Outside, under the peritoneal covering, numerous large and tortuous veins may be traced plainly. Nerves pass with the vessels into the substance of the coats and lymphatics, often of large size." We do not know of a more vivid description to be found in modern medical writings.

With excellent judgment the author has introduced a chapter upon extra-uterine gestation, somewhat of an innovation in works upon the diseases of women; but, as the author has managed it, of great practical value. In this he has set an example, which, we doubt not, every coming writer in this department will follow. In this chapter Dr. Parry's work lives after him in the cordial appreciation of Dr. Edis.

In the sections upon plastic operations, the various procedures are well described and illustrated, with the exception of Dr. Tait's, in which the description is very meagre, and the wood-cut of no value. As Dr. Tait's operation for the repair of the female perineum is difficult to understand from a mere description, and as it affords some great advantages to the patient, it ought to be freely illustrated. In the description of vesicovaginal fistula the operation figured is that of Simon. For English readers this is an improvement, as the method of Simon gives better promise of success, especially to the novice, than the American operation. Indeed, following the method of Sims or Emmet, gives the most uncertain results of any gynecological operation to the beginner, and nothing but the constant example of the inimitable skill of these great operators has kept the method in use to the exclusion of more scientific procedures among us.

In the chapter upon hysteria, we have nerve tire, or neurosthenia, which gives Dr. Edis occasion for a long quotation from Mitchell upon his milk treatment. This treatment has drawn to itself marked attention in England. Several years ago, Dr. Graily Hewitt invited the reviewer to meet him at a small hospital in Gower Street—his "flexion hospital," as he called it, in which he was employing a system of rest and forced feeding, similar to Dr. Mitchell's plan, with the exception of massage and electricity. He seemed quite elated with his results, and generally exhibited them to his medical visitors. Near the conclusion of the volume we have

a chapter of ten pages upon diseases of the bladder, which is the most unsatisfactory part of the work. It is too briefly written to be of much practical value, and yet the subject is one of greater importance to the general practitioner than any other in gynecological practice.

Dr. Edis's book does not go beyond the current ideas of etiology, pathology, and treatment. He has made no attempt to garner in the permanent form of the treatise the rich harvest of the special journals. Each author ought, however, to contribute his share to this work. The store of material is so great, that, going over the great field of gynecology, as the author of a text-book does, it is scarcely within the reach of one busy, hard-worked physician; it must, therefore, be the work of several hands, a division of labour, and very possibly a division of interest also.

2. It is a very difficult thing to understand for whom Dr. Brown wrote his *Clinical Handbook on the Diseases of Women*; judging from his preface, which is modest in its disclaimer of originality, "it is intended as a guide for the use of medical students and country practitioners," but, judged from its make-up and matter, there is no class of people in any way related to the medical profession to whom the book could be of any use. There are two pages of dictionary, in which such words as "clap," "onanism," "vulsellum," and others find place in connection with many obsolete terms. He naively describes the mammary glands as situated over the pectoral muscles, the "nipple, placed in the centre of the gland, lies opposite the fourth rib, and is surrounded by a rose-pink ring." He describes the bulb of the vagina as situated in the "upper vaginal wall near the entrance," and that it has been mistaken sometimes "for the womb." We looked with some anxiety to see if he had described the rectum with reference to a very possible mistake, which the "country practitioner" ought to be guarded against, and found that he had neglected a very manifest duty. He directs the benighted rural individual, for whom the book is written, to examine his patient upon a kitchen table, "three inches lower at the end where the patient's head lies," and then, with the aid of a little domestic upholstery, "you have an arrangement which can scarcely be improved upon." Before sitting down comfortably to examine his patient, the doctor is directed to wash his hands, and then, seated at the end of the table, we suppose, some distance lower than his patient, the left index finger explores the vagina, while the right hand makes steady pressure over what the author terms the "pubis." This, he informs us, with the dignity of italics, is called bi-manual palpation, and tells the student in four lines all that this manipulation will teach him, which we think is space enough; but, with malice directed against the peace of every inquiring mind, he tells us that it will teach "many other points only to be learned by experience." We regret to say that he neglects to direct the doctor to wash his hands at the conclusion of his examination. Now the reader may regard this last remark as a hypereriticism, and as really unkind to a not undeserving author; but if, from the above, the reader has caught an idea of how elementary the book is, that it teaches the alphabet of the easy, yet so difficult, art of gynecology, and to implant in the ancient, bucolic mind a new idea, a difficult thing to do we fancy in the opinion of Dr. Brown, the reader will perceive that the omission noticed by the reviewer is a very serious matter. In this sin of omission, touching the subject of cleanliness, *after* an examination, Dr. Brown has very good company. You might trust a bright student to his wits very

safely about making an examination, but he ought not to be trusted uninformed about protecting himself after he had completed his operation. Can the reader point out a single book where this subject is given the importance it deserves? If a gynecologist cannot afford any other religion, he will do very well if he be as near to Godliness as thorough cleanliness will make him.

Philosophically considered there are no such things as dirt and filth. They both have their place, and use, and eternal fitness. In this sense we exclude all idea of uncleanness in the practice of the art of gynecology. We have thus cleared the way for the assertion that the practice of gynecology may be made, of all earthly employments, the most filthy. But this exists in the operator, not in the subject, or the spontaneous condition of the subject. Many methods of treatment deliberately followed by physicians are, from their nature, filthy. We know a very good man, if not much of a gynecologist, who always inserts a piece of sponge to retain a displaced uterus in position. The point, however, to which we wish to direct the attention of the reader, is the care of the instruments and hands. The hand of the gynecologist is a peculiar organ. It is the hand of the physician plus a certain spiritual quality that renders it subservient to the highest use to which the sense of touch can be applied; and in its full perfection, like the brain of the poet, is born, not made. It is not as a scientific organ that we wish to speak of it; but as a channel for infection to the owner. This has already become a serious matter. American gynecology can count a small battalion of victims, dead or maimed. Storer, of Boston, lost years of his valuable life; Thomas, of New York, had a narrow escape; Engleman, of St. Louis, has a deformed hand, with his vitality hardly yet recovered from the shock. Armsby, of Albany, carried to the grave a maimed hand, with his health shattered beyond repair; Dean, of Rochester, lost his life; and we might go on through half a page with the enumeration of these accidents. These are all cases of septic infection. And we look upon it very much as though it was a case of typhus fever which had occurred in a physician's household, something that ought to be avoided, and a disgrace because it was not. In this age, when all surgery and half of medicine are turning upon the germ theory, the person of a surgeon ought to be protected by scientific forethought and personal hygiene, for the sake of the example, if for nothing else. A matter of first importance is the care of the finger-nails and fingers; and this is not the care given to these parts by gentlemen and ladies. Fashion teaches that the skin should be forced back over the matrix of the nail, so that the small semilunar rim will show at the base of the nail, thus giving it an almond shape. This, on the contrary, the gynecologist ought to allow to grow firmly upon the nail, interposing a firm shield against the entrance of infecting material under the quick, as it is commonly called. "Hang-nails" ought never to be allowed to form, and they may be prevented by keeping the skin soft and firm. Nothing promotes a healthy skin so well as sunlight; the well-browned hand of a man, not a labourer, is seen to be soft, firm, and non-absorbent. The specialist ought not to wear gloves in summer time, except a light cotton glove, for the purpose of keeping his hands clean; or, if he drives himself, under no consideration ought he to wear gloves that will sweat the hands. These are not the rules to form a dainty hand, but the young gynecologist must understand that women go to him professionally, because they are obliged to, not because of the fit of his clothes, or the beauty of his hands.

And this part of our digression brings us back to the pleasant task of reviewing Dr. Brown's book. He tells the student to lubricate his fingers with soap and water before making an examination, and we have noticed the same direction in other hand-books. The exploring finger is lubricated for two purposes; first, to facilitate its introduction, and lastly, to protect the finger from the many forms of infection to which it is exposed. Soap and water may answer the first purpose in a very imperfect manner, but it is useless for the latter. It is quite common to use eosmoline or vaseline for this purpose; but we have noticed that the frequent use of these lubricants causes the skin to flake up and become rough. Oils are faulty, because they are liable to drip upon the clothing or floor, and lard at some seasons is too hard and liable to become rancid. A mixture of about one-third olive oil and two-thirds lard, with two per cent. of carbolic acid or oil of thyme, makes a cheap and reliable lubricant. The conditions to be met are, a material sufficiently firm and consistent as not to rub off the fingers, fluid enough to lubricate, and furnished with some unirritating antiseptic. Next, and this for the sake of the patient, comes the care of the instruments. About this Dr. Brown does not say anything, and, as for that matter, neither does Dr. Edis, or Dr. Thomas, or Dr. Emmet, or even Dr. Mundé; but the instruments require a special hygiene that is never for a moment relaxed. The expensive instruments, and those used in great operations, are, of course, properly taken care of, but the every-day instruments are those which may become dangerous to the patient. Now all this is a very serious matter, especially as we are reviewing this book for the sake of the student and country practitioner, for whom it is written, we feel obliged to tell them that it is a matter of dollars and cents. It has happened to us that a lady has applied for treatment, giving as an excuse for leaving her physician, a very worthy man, and one in whom she had great confidence, that his instruments were so filthy that she dared not trust herself in his hands any longer.

Cleanliness is a very simple matter; there is but one element in it, ceaseless watchfulness. It must be looked after to-day, to-morrow, always. In nothing is this more true than in gynecology, in which a physician may do more harm by his carelessness than he can do good by his treatment. Naturally, he uses the same lubricant for his instruments that he does for his hands, and both as a matter of course and convenience the same means are used to clean both hands and appliances. For this purpose nothing is equal to good yellow soap, kitchen soap, for the reason that it removes oily matter and other forms of impurity more quickly than any fancy or toilet soap that we have ever used, the hands are exposed to water for a shorter time, and are thus less liable to crack or chaps. Since this hitherto unwritten chapter of gynecology is now disposed of, we can resume the thread of our review.

As Dr. Brown's book is not only a hand-book, but a clinical hand-book as well, this feature deserves some attention. A scientific hand-book is a short practical *résumé* of a subject for handy reference. We have a few notable instances in gynecology. Take Lombe Atthill's book, in the form of clinical lectures, which is without a peer as a hand-book. There is scarcely a formal reference to a "case" in the volume. Lawson Tait, with the finest literary art, blends any special application of a principle to a case so unobtrusively with the text, that the reader feels that no time is lost in its clinical details. Such an application of the general to the special, as is usually found in the clinical text-book, is a useless burden to

the text. Like a wood-cut it can illustrate but one or two of the general principles involved, and as cases are endless in the variety of their clinical features, they serve rather to confuse the young reader than clear up an obscure point in practice. The proper place for a formal display of case histories is in the special or general periodicals; and the proper place for the general principles established by the clinician is in the treatise or hand-book.

In the clinical hand-book under review, the clinical details tend rather to obscure than to make clear the text; but if this was their only fault, we should allow that matter to pass. A large proportion of the cases which are used is borrowed, and thus lack the graphic vividness that belongs to personal experience on the part of the writer, while some of the author's own details are impossible to understand. For instance, upon the subject of leucorrhœa, he relates the case of a girl, twelve years old, whom he examined through the vagina with his little finger, and found the cause of her leucorrhœa to be a pin, which he removed from Douglas's pouch, and this he did with his little finger, even unaided by bi-manual palpation, as practised by our author. In some cases he operates through a small bivalve speculum, which is certainly bad advice to the country practitioner. As one of the means of arresting a pending abortion, he directs plugging of the vagina by iodized wool, to arrest hemorrhage; and yet, on the next page, he gives the true result of tamponing the vagina, which is to excite uterine contractions. In this operation he directs that the plug be pressed into the anterior *cul-de-sac* and into Douglas's pouch. In several other places he confounds the posterior *cul-de-sac* with the sac of Douglas.

We have given more space to the book than it deserves. We regard the volume as a dangerous one, because the author caters to a class of inexperienced readers by the style, size, and price of the book. The country practitioner is a long-suffering individual, and he deserves all the protection that the reviewer can afford him against the designs of ambitious authors. The contrast between the two volumes that stand at the head of this article is a striking one. The author of one is earnest, pains-taking, learned; his book shows labour, thought, and careful revision, and is altogether a manly work, such as one should expect from an English gentleman. The other is careless in the statements of opinion and fact, a misdemeanor on the part of one who professes to be an educator, written in obscure English, teaching false anatomy and doubtful practice. The only motive of the book seems to be an outcome of the morbid desire of the author to write a book, cost what it may to his own reputation and the well-being of his readers.

E. V. de W.

ART. XIX.—*Scrofula and its Gland Diseases*. By FREDERICK TREVES, F.R.C.S. Eng., Assistant Surgeon to, and Senior Demonstrator of Anatomy at, the London Hospital. 12mo. pp. xii., 205. London: Smith, Elder & Co., 1882.

THIS is a notable contribution to medical literature for several reasons. Not only is it claimed to be the first special work on the general pathology

of scrofula which has appeared in English for many years, but the extreme prevalence of scrofula, the very misty views entertained upon the subject by many physicians, the great changes which have taken place in our knowledge of its pathology, and lastly, the admirable manner in which Mr. Treves has treated the matter, all tend to enhance the importance and value of the book.

Since the days of Phillips and Glover scrofula, after long neglect, has been subjected to special study by many observers upon the continent of Europe, and the results of that study, as well as that bestowed upon it by himself, are given to the profession by Mr. Treves in this modest-sized volume. These results are said by Mr. Treves to amount to an almost complete reconstruction of its pathology, a more distinct definition of its clinical outline, and the giving of a more distinct individuality to the disease. A book which claims to present to the profession such important results, and doctrines, is entitled therefore to the somewhat extended notice we propose to give it.

Mr. Treves attributes the illy-defined limits so often assigned to scrofula, and the opposed views entertained concerning it, to two causes. 1. The difficulty of isolating scrofulous disease from the manifestations of mere ill-health. 2. The persistent attempts to find some characteristic anatomical element for every disease. Thus one man will speak of a patient as slightly scrofulous, while another will regard struma as no less a specific affection than is cancer—the discrepancy being dependent upon the fact that the one man is a clinician, the other a pathologist. Continued observation has gradually limited the area of the condition once described as mere frailty of constitution, and has demonstrated that certain disorders are no longer to be thus classed, but are in reality specific, and dependent upon certain ascertained pathological conditions. The clinical observer who once was in the habit of regarding every manifestation of poor health as scrofulous, is now obliged to recognize some of these manifestations as the result of hereditary syphilis, and others as having their origin in rickets. This disposition to regard scrofula as the *omnium gatherum* into which could be cast any affection without precise and definite pathological limits, has tended to discourage close histological research into its nature, and it has only been of late that such examinations have been made with sufficient accuracy, to permit of the attempt to reconstruct our theories upon the subject.

Mr. Treves's second chapter is taken up with the pathology of tubercle, and the relation which exists between it and scrofula. After discussing the very marked modifications in our knowledge of the histology of tubercle undergone of late years, and showing that the latest microscopical investigations do not permit us to assert that it presents any specific anatomical element, Mr. Treves goes on to consider what is the relation existing between tubercle and scrofula. It is shown that in a scrofulous gland the most perfect and typical primary tubercle may be met with. In cold abscesses, in lupus, and in some other scrofulous manifestations, true tubercle is found, and is known by appearing as a mass, consisting of one or more giant cells, surrounded by a zone of epithelioid cells and the whole inclosed in leucocytes or embryonic cells. But these distinctly tuberculous appearances are not found in all scrofulous diseases, and in some of them have never been demonstrated to exist at all. Mr. Treves accounts for this fact upon the supposition, or theory, that tubercle is the highest manifestation of a certain process, to which less perfectly developed disease may

never attain, and thinks it unwise to draw a fast line of distinction between tuberculous and serofulous disease of a gland, which may altogether be a question of degree and not of difference in nature. He however thinks that it is an error to speak of a serofulous disorder as tuberculous, even although the existence of primary tubercle may be demonstrated in the case, for the reason that certain grave consequences have become associated clinically with the title miliary tubercle, which are by no means true of serofula. Indeed, the relationship existing between serofula and tuberculous disease is close, and yet distinct. Primary tubercles will be found in both diseases, but the aggregation of these primary tubercles, the gray granulation of Laennec, is very rarely, if ever, found in a truly serofulous disorder. The miliary tubercle represents the more advanced step in a process, which in serofula is very rarely reached, easeous degeneration setting in, and cutting short the process. Thus it would be correct to regard serofula as a milder form, or stage of, tuberculousis.

As regards the nature of tubercle Mr. Treves is not inclined to adopt the generally received view that it is a neoplasm, although it is not yet definitely settled whether of connective, or adenoid origin. However this may be, our author is convinced that it has its beginning in a peculiar form of inflammation, that it often is accompanied with inflammatory signs, and that in those cases which are serofulous, and yet in which tubercle exists, it may proceed to suppuration and cure, as is often seen in the case of a gland. He further explains his view by a comparison of tubercle with syphilis, and thinks that as that disease is attended with the formation of gummatous growths dependent upon a peculiarity in the inflammatory process, so tubercle follows a peculiar inflammation and is properly an inflammatory neoplasm.

Chapter IV. discusses the subject of the inoculability of tubercle. In it many recent experiments are detailed and criticized, and the conclusion arrived at that nothing is as yet definitely settled. Hitherto our attention has been fixed upon tubercle, the anatomical ally of serofula, now, in Chapter V. we come to serofula proper, and a carefully studied definition of it. The whole chapter is devoted to an examination and exposition of the definition given, which may be summarily described as a tendency to inflammations of a peculiar type, usually chronic, induced by slight irritation, and prone to continue after the removal of the irritation. There is also a marked tendency in the disease to spread locally, and to involve lymphatic tissue. In this vulnerability of lymphatic tissue we have the most distinctly characteristic trait of serofula, and recent experimenters and microscopists seem very generally to unite in attributing to it most of the well known serofulous manifestations. The whole chapter is an interesting study, but we are obliged to content ourselves with this brief summary of its contents.

In the next chapter Mr. Treves considers the relation existing between serofula and phthisis, and the antagonism existing between serofulous diseases. Here, also, he goes largely into the conflicting views and theories entertained by competent observers, through which we shall not attempt to follow him, confining ourselves to a statement of his own opinions, which are very clearly given. Mr. Treves believes that serofula and phthisis are due to the same morbid process, that the morbid action is identical, and the same, in the two diseases, and that phthisis may be regarded as serofula of the lung, and a serofulous lymphatic mass as phthisis of a

gland. He thinks this opinion is proven to be correct by the facts that the two diseases occur in persons of the same habit, that the same causes, as measles, predispose to both, as pointed out by Ruehle and Thaon, and that they seem to be mutually associated hereditarily.

Mr. Treves further points out that the definition given of serofula applies almost equally well to phthisis, that the histological resemblance between the two affections is also very close, as is shown by the researches of Niemeyer, Ruehle, Rindfleisch, Grancher, and Klein, and finally that the two diseases occur sometimes in the same individuals.

While thus maintaining the identity of serofula and phthisis, Mr. Treves thinks that the comparative rarity of instances in which both diseases appear in the same person, is accounted for by the fact that there is a decided antagonism between serofulous diseases of all kinds, and that the occurrence of one serofulous manifestation prohibits the appearance of another. That this is a fact most surgeons will admit, and the author of this book cites some extended observations made by him at the Margate Infirmary in its confirmation.

Chapter VIII. is concerned with the etiology of serofula. Premising that it may be either hereditary, or acquired, the first place among the determining causes of serofula is given to phthisis in the parents. Mr. Treves does not think that we can safely accept the statement frequently made that phthisis in the father exerts a more deleterious influence upon the offspring than does the same disease in the mother, but, on the other hand, his observations lead him to think that serofula in the mother is more influential as a cause than where it exists in the father. Having given serofula in the parents the second place among the hereditary causes of serofula, Mr. Treves goes on to consider the influence of poor health, and, more especially, of syphilis, in the parents, and thinks that while we may often be in doubt concerning the influence of the former, we must admit the power of the last. Considerable space is also given in this chapter to the other predisposing and exciting causes of serofula, and the pleasing conclusion is reached that the disease has undergone a diminution in frequency of late years by improvements in sanitary science, the improved condition of the poor, "and by advances, possibly, in the science of medicine, and in the treatment of disease."

It will be noticed that Mr. Treves bestows very faint praise upon his own science in the words we have just quoted, and it certainly seems to us that he errs in so doing. The improved sanitary condition, of which he appears to entertain no question, is very largely a triumph of medical science, and it is but one of the triumphs which mark the progress of medicine. It is a mistake to think that that progress has been small because we are confronted by many diseases we cannot cure. In the last fifty years the accumulations of exact knowledge have been many, and the application of principles deduced from observations, to the cure and prevention of disease, have been neither few nor insignificant. We, therefore, think that Mr. Treves might well venture to claim a little more for our science.

In Chapter IX. "the serofulous individual" is surveyed *in extenso*, and the whole range of peculiarities and characteristics which go to make up that oft described personage, are given in detail. The most recent contributions to this subject have been the typical portraits exhibited by Dr. Mahomed and Mr. Galton at the International Congress of 1881, and which have since appeared in the Reports of Guy's Hospital for the same

year. In his survey of "the serofulous individual" Mr. Treves passes in rapid review the whole series of serofulous manifestations—manifestations which are by no means to be found in any one person, but are recognized as serofulous whenever they appear in any individual—and he thus presents a general descriptive account of the appearances of the disease itself as commonly seen.

The second part of Mr. Treves's book deals with serofulous glands. It is the most important, and of most interest to surgeons. A preliminary account is given in Chapter X. of the anatomy of the external glands, which is of much importance, as bearing upon the regions from which they individually receive lymph vessels, and thus enabling the surgeon to look intelligently for the seat of the irritation, which has been the exciting cause of the mischief. Especially is this shown to be important in view of the statements contained in the next chapter, that in almost every case some exciting cause can be discovered to have induced the gland disease. Mr. Treves, while not denying that cases occur in which this exciting cause cannot be ascertained, inclines to the opinion that such a condition only exists from defective or deficient knowledge. He takes issue with Dr. Allbutt that a serofulous gland can arise from a local cause without an already existing predisposition, and maintains that the tendency is an essential element in the case. After citing some instances which go to fortify his opinion in this matter, Mr. Treves proceeds to the consideration of the local lesions which induce gland disease. These are numerous and do not need recapitulation here. But there is one important statement made while speaking of the very great preponderance in the number of cases of cervical adenitis, which it is well to emphasize. Mr. Treves accounts for this preponderance upon the ground that "the peripheral lesions most active in exciting gland disease in serofula are those that are located in the adenoid tissue of a mucous membrane," and that this adenoid tissue, while existing in most of the mucous membranes, is found in much the greatest amount collected about the mouth and pharynx, forming in the latter the largest masses of such tissue in the body, viz., the tonsils. Adenoid or lymphoid tissue is also plentiful in the bronchial and intestinal mucous membranes, and we accordingly find that the cervical, the bronchial, and the mesenteric glands are those most frequently affected, in close correspondence with the amount of adenoid tissue existing in their immediate neighbourhood.

In Chapter XII. are detailed the pathological changes observed in lymphatic glands. The first change noticed in a gland taking on diseased action is an increase in the number of the lymph-corpuscles, both in the sinuses and in the gland tissue proper. The origin of these corpuscles is as yet under debate, their presence having been variously accounted for, it having been variously suggested that they are derived from some initial inflammatory lesion, that they are leucocytes from the neighbouring blood-vessels, or that they originate by proliferation of the existing cells.

Contrary to the frequently made statement that this accumulation of cells first occurs at the periphery of the gland, Mr. Treves says that it invariably begins at the centre, in the deeper or medullary portions of the gland.

The next change noticed is the appearance of spots, which, upon closer scrutiny, are found to be occupied with very varied cellular forms; from lymph corpuscles to the large cells with glistening protoplasm first observed by Rindfleisch, and regarded by him as characteristic.

When the progress of the disease is acute, after various other alterations, spots of opaque tissue appear, and go on to complete caseous degeneration. When, however, the disease is less acute, there is a much more prominent development of fibrillar elements, and the proper adenoid tissue, the reticulum within the sinuses, is more extensive and dense, and giant cells appear in the opaque patches which form. These giant cells are well known to observers, and in the opinion of Mr. Treves are lymph-coagula involving in their coagulation various cell-elements. As the reasons for this opinion the author claims that the position of these cells is probably in the lymphatic sinuses of the gland, although this is not always apparent, owing to the rapidity with which the anatomical details of the part are lost. They precisely resemble the giant-cells sometimes found in chronically inflamed connective tissue which occupy the lumen of lymphatic vessels; then at the time of their advent a material precisely similar to coagulated lymph appears throughout the gland.

We have not space to follow our author any further in the pathological details of gland disease; they have been made public in his lectures at the College of Surgeons, in March, 1881, and are given minutely in this volume. His descriptions are also made much plainer by the plates at the end of the volume, prepared by him for an article to appear in the forthcoming new edition of Holmes's System of Surgery.

Chapter XIII. deals with the symptoms and diagnosis of scrofulous lymphatic glands. Mr. Treves draws attention to the fact that glandular enlargements are not generally symmetrical, but an exception to this rule is sometimes observed where the enlargement depends upon hypertrophied tonsils. In these cases symmetrically placed glands can often be felt at the level of the hyoid bone. The progress of the disease in glands is very uncertain, and, where several are involved, the rate of progress may be very different in them. Resolution may occur at various stages and in very different kinds of glands, but it is most rare in those cases where a whole chain of lymphatics is involved, and where well-developed tubercle is revealed by the microscope. Suppuration is a very general result, but it is difficult to decide the proportion of cases in which it occurs, on account of the very slow progress of the disease, extending, as it often does, through many years. In 131 cases, obtained from the records of the Margate Infirmary, suppuration occurred in 93 instances. When suppuration does occur it may be either in the gland itself, or in the connective tissue around it. It is important to distinguish between these two kinds of abscess. When situated in the gland tissue it yields a caseous pus, whereas, when located in the surrounding tissues, it will be healthy and laudable; but, in either case, the abscess will continue to discharge until the whole of the diseased gland is gotten rid of. Often, when the gland has been removed, either with or without surgical interference, another gland may appear and take on similar action, and the whole tedious process be gone through with again. Injurious pressure is sometimes exerted by enlarged gland masses. This is most common in the mediastinal glands, but is sometimes, though rarely, seen in connection with cervical masses. Leucocythæmia is a very rare complication. Mr. Treves says but little upon the subject of diagnosis, and thinks there is little danger of confounding a scrofulous gland with anything but the tumours connected with Hodgkin's disease, from which it is readily distinguished, however, by the more rapid progress made by the latter. Yet the matter is not always so simple. The writer of this review recently removed a gland from beneath the angle of

the jaw, which was solitary, round, the size of a bantam's egg, and with such a sense of tense fluctuation, that he was quite uncertain whether it would turn out to be a gland or a cyst.

Chapter XIV., and last, is occupied with the treatment of serofulous lymphatic glands, and contains very little that is new. Indeed, the therapeutics of serofula are altogether out of proportion to its pathology. The latter may be unsettled, but about the former there is not much difference of opinion. Improved hygienic surroundings, sea air, iron, and, above all, cod-liver oil, are the general remedies upon which the most reliance is deservedly placed. Iodine, once so highly lauded, has not preserved the reputation it once enjoyed. Yet that the syrup of the iodide of iron is a valuable preparation is admitted by Mr. Treves, and it would shock many among us were its virtues called in question, but how much the iodine in it has to do with its efficiency may well be doubted.

In speaking of improving the hygienic surroundings of the poor, Mr. Treves makes the suggestion, whether the institutions whose wards are crowded with confirmed cases of serofula, would not accomplish more good if the lighter cases, those in which the taint is less deep, were received instead. He seems to think that it would be wise to aim more at utilizing their advantages for prevention, than at ameliorating and improving the condition of hopeless cases.

Mr. Treves's advice, concerning local treatment, is excellent. He lays much stress upon the importance of removing any ascertained cause of irritation. Particularly should the condition of the mouth and pharynx be examined into in cases of cervical adenitis, and he advises that where enlarged tonsils exist they should be at once removed. An enlarged gland should be regarded as evidence of some mischief existing elsewhere, and a careful search should always be made for it. The indiscriminate and long-continued use of poultices is condemned. Early exit should be given to pus. It is a great mistake to allow large accumulations to take place. Mr. Treves condemns the external application of iodine in the early stages of gland disease, when the process is comparatively active, but thinks it is often of value when the disease is far advanced, and extremely indolent. When he uses it he relies upon the *unguentum plumbi iodidi* rubbed into the part, morning and evening.

With regard to operative interference, Mr. Treves thinks that when the tumour can be easily and safely removed it is well to do so, thus getting through rapidly with that which nature, unaided, is very long in accomplishing. He thinks it is advisable to operate when the tumour is solitary, superficial, and without adhesions; when, though these are many, they have increased without pain, are limited and few; and finally, when a single fairly movable gland is exerting injurious pressure upon neighbouring parts. Mr. Treves has seen no ill effects follow from operations thus selected, and thinks we can dismiss all fears of exciting a fresh outbreak of the disease thereby.

If the tumours will shell out easily the operation is simple and very satisfactory, but should the operator find the adhesions firmer, or the number of glands much greater, than he anticipated, it is much safer to do too little than too much.

Scooping out the gland by means of a Volkmann's spoon, inserted either through a sinus or a small incision, Mr. Treves regards favourably when the gland is fixed, and there is, therefore, no risk of a part of its contents

escaping into the cellular tissue. When in these cases a deep cavity is left, a drainage tube should be inserted.

The puncture of a scrofulous gland by a cautery, the size of a No. 7 catheter, Mr. Treves thinks, is one of the best measures at our disposal. He has practised it repeatedly and very satisfactorily. The cautery is thrust through the skin and into the body of the gland in several directions without removal, thus making but one opening in the skin.

If pus or cheesy matter follows the removal of the iron, a poultice is applied, but if none such makes its appearance, a simple dressing is sufficient. Our author thinks it is simpler than scooping, and much preferable. How it acts he does not know, but Mr. Treves is satisfied that it favours speedy resolution, which, in cases where no cheesy matter escapes, is accomplished in from fourteen to twenty-one days.

Of interstitial injections, Mr. Treves has a rather poor opinion, nor is he more in favour of treating diseased glands by setons, electricity, crushing between the fingers, subcutaneous laceration by a cataract needle, or long-continued compression.

For the evacuation of gland abscesses he strongly recommends the use of the actual cautery, rather than by the limited incisions usually employed. He opens the abscess by a fine cautery, and allows it to empty itself. Should discharge continue for an undue period, he makes a larger opening into it, and if a gland mass is found projecting into the cavity he punctures that also with the hot iron. Where persistent sinuses result, Mr. Treves treats them upon general principles, and reminds his readers that one of these is rest. He, therefore, advises that where the neck is the seat of the disease, an attempt should be made to restrain its movements by a gutta-percha stock, extending from the occiput and lower jaw to the chest and shoulders.

We have now followed Mr. Treves to the conclusion of his work, and, in taking leave of it, must repeat the favourable opinion we expressed of its value when we began. While there is room for some condensation and a better arrangement of the pathological portion of the work, it cannot be doubted by any one who carefully studies this book that medical literature has been a gainer by its publication. It is not a book to be read hastily, but will repay a close perusal. The plates appended are good, and help to make clear Mr. Treves's descriptions of the pathology of scrofulous glands.

S. A.

ART. XX.—*A System of Surgery, Theoretical and Practical, in Treatises by Various Authors.* Edited by T. HOLMES, M.A. Cantab. First American from Second English Edition, thoroughly revised and much enlarged, by JOHN H. PACKARD, A.M., M.D., assisted by a large corps of the most eminent American Surgeons. In three volumes. Vol. III. Philadelphia: Henry C. Lea's Son & Co., 1882.

WHEN Dr. Packard, hardly more than eighteen months ago, called upon his American colleagues to aid him in the revision of this important work, few would have believed that so prompt and expeditious a response could possibly have been made. But little more than that amount of time has

been occupied between the distribution of the work, and the completion of the three capacious double-column volumes. Such enterprise as this is in amusing contrast to the stolid German method, which plans and sets agoing a most comprehensive handbook or system without any well defined notions on the part of the originator as to the prospect of its being completed during an ordinary lifetime. Brilliant as are the achievements of Germany and other European nations in the domain of science, it is evident that the practical character of the Americans enables them to put the work that has been accomplished before the world in its most available and desirable form. Surely few tasks could be more difficult than the attempt of Dr. Packard to renovate by transfusing the life blood of the last decade of medical science into a body from which the freshness of youth has departed. We must confess that it has been accomplished more satisfactorily than we believed possible, in spite of the undeniable fact that the wrinkles are here and there unpleasantly conspicuous.

The present volume is divided into six parts. Regional surgery is concluded in the first part, disease of the joints, bones, and orthopedic surgery come next: there is a short section devoted to the nervous system, another to gunshot wounds, another to operative surgery, and part six brings up the rear with a miscellaneous collection of subjects, among which we notice an entirely new article on the skin by Dr. Van Harlingen, of Philadelphia, and one on hospitals, and the valuable appendix by Dr. Norton Folsom.

The book opens with an article on Diphtheria and Croup, in which the old views on the non-identity of the two diseases are left untouched by the American reviser. The former is likened in its febrile character and epidemic influences to scarlet fever, while the latter is regarded as an inflammation of the air passages attended by the exudation of a false membrane. It should be remembered that it is a matter of no small practical importance to establish a well-formed professional opinion on this question, as it is the custom of many elder practitioners to look upon croup as a non-contagious disease. Whether or no the type of "old-fashioned croup" ever existed as described in the text-books, certain it is that few practitioners of middle age are able to identify it with what has been observed in their own experience. The article on Diseases of the Larynx is, we should say, rather medical than surgical, and the arrangement of the book which separates injuries from diseases obliges the reader to refer to the first volume for what is to be said on tracheotomy.

The chapter on the Thyroid Gland seems to us altogether unworthy of such a book as this. The able contributions of Virchow and others to the anatomy and etiology of goitre, and the success of Billroth, and indeed of surgeons in all countries where the disease is at all frequent, in operations for extirpation of the tumour, have placed the surgical aspect of this gland on a footing which requires a thorough revision of the original article. The brief notes which the reviser, Dr. Cohen, has made refer chiefly to experience in treatment in his own practice, which have been confined chiefly to local applications. On the other hand, the succeeding article on apnoea is excellent, we might almost say classical. Considerable prominence is given to the Marshall Hall and Sylvester methods which have always seemed to us awkward and complicated ways of doing what may be easily and simply effected by manual compression of the thorax. In the hands of excited and inexperienced persons they would be worse than useless, tending as they do to invest a very simple act with the complica-

tions of a difficult operation. We notice one very important omission in the rules of treatment in cases of impending death by apnoea given by the Royal Humane Society, and that is that success has often rewarded the efforts of hours. This fact cannot be too strongly impressed upon the public, for we have little doubt that even at the present time, after all the attempts which have been made to educate the public, cases are constantly abandoned as hopeless which might be restored by persevering efforts at resuscitation.

Diseases of the bones, joints, and spine, and orthopædic surgery form the greater portion of Part II. Dr. Markoe has had a difficult task in the revision of Holmes's article on diseases of the bones, which, like most English work on pathology, partakes of the character of a bygone period in medical literature. This is strikingly shown in the part devoted to malignant tumours of bone, where the reviser has made extensive and judicious additions, borrowing largely from Dr. S. W. Gross's excellent summary of modern news on that subject. Mr. Holmes appears to much better advantage in the chapter on excisions of bones and joints, which follows a department in which English surgeons have justly achieved distinction. The author correctly says of Lister's operation of excision of the wrist that it is one of the most tedious and difficult in surgery; our own experience favors the much more simple method of lateral incisions so made as to avoid the vessels, and to do the minimum amount of injury to tendons. These should be modified so as to adapt themselves to existing wounds of sinuses. The real obstacle to future usefulness of the hand after this operation is the shortening of the metacarpal bones, thus making subsequent motion at the metacarpo-phalangeal articulations difficult. We are inclined to agree with Mr. Holmes's view that "many cases will terminate quite as well if judiciously treated by incisions when necessary, the removal of portions of bone as they become loose, and above all the constant and persevering use of passive motion to the fingers." Excision of the hip is not regarded with favour, but Dr. Bradford in the succeeding article on disease of the joints shows that much better results have been attained during the last ten years than formerly. Excision of the ankle-joint is an operation which has never attained much popularity. So distinguished a surgeon as Langenbeck has, however, been one of its enthusiastic advocates, but his experience has been chiefly confined we presume to traumatic cases, in which it is pretty generally conceded that satisfactory results may be obtained. The author has failed to note the success of this operation in disease during the period of childhood. On the other hand, it should not be forgotten that Sayre has obtained most excellent results with conservative treatment, which, however, is perhaps better adapted to disease of the tarsus than the ankle-joint proper.

The revision of the articles on Diseases of the Joints, Spine, and Orthopædic Surgery has been undertaken by Dr. E. H. Bradford, whose additions, although necessarily brief, are all judiciously made. The statement of present views on the treatment of diseases of the hip and spine are favourable examples of his work, which has greatly increased the value of these chapters. In the article on Orthopædic Surgery, or, as the reviser would have it, "Orthopedic," we notice some remarks on the treatment of inveterate cases of club-foot by excision of a wedge-shaped portion of the tarsus. The bony prominence or hump, which is usually marked in these cases, and is the chief obstacle to the maintenance of a good position, is thus removed, and the foot comes readily into place with

most satisfactory results, as any one who has had an experience with this operation will, we feel sure, testify. Dr. Bradford has also added some remarks on osteo-clasis for curvature of the bone, in which he and some of his colleagues have achieved much success.

Part IV. is devoted to Gunshot Wounds. The original article, by Thomas Longmore, the Professor of Military Surgery at Netley, is one of the classical contributions to this subject, and is doubtless familiar to the readers of this Journal. The reviser of the present edition is Dr. Hunter McGuire, who had a large experience in the Confederate army during our late war. We regret to find, however, that he has not been able to avail himself of the experiences of the Southern armies, of which the world has as yet heard little or nothing, but has relied almost exclusively upon the Surgical History of the War for his additions to the text.

Part V. deals with Operative Surgery, including, as it should, anaesthesia. This article is of unusual interest, giving, as it does, the contrasts of opinion which a decade has brought about. In the original English article chloroform is of course given the first place—the writer prefacing his remarks upon this agent by the statement that “sulphuric ether is still extensively used as an anæsthetic in the United States; but in Europe chloroform is generally preferred to it.” Dr. Reeves, the reviser, shows the change of opinion, not only in Europe but in this country, in a striking manner. Ether, he says, is now used exclusively in at least one-third of the hospitals in Great Britain, while there is shown a general disposition of the profession in that country to abandon chloroform for ether. In this country he finds that “some strongly-marked geographical lines can be drawn.” All New England surgeons use ether. In the cities of New York, Brooklyn, and Philadelphia, there are thirty-six surgeons who use ether, three who use either agent, and only two who use chloroform exclusively. The remainder of the country may be divided into two sections, North and South, by a line running west between Maryland and Pennsylvania, and along the Ohio. North of this line the figures are roughly thirty-seven to twelve in favour of ether, while on the southern side they are in favour of chloroform twenty to twelve. A note by the editor, Dr. Packard, on the “Primary Anæsthesia,” first described, we believe, by himself, concludes the article.

The descriptions of operations are sufficiently explicit, as a rule, and the illustrations are of a sufficiently high order of excellence. Dr. Packard has appended a note on trephining, colotomy, and excision of the rectum. These are doubtless intended to fill out the list, but as these operations are described more at length elsewhere, we think their brief notice at this point is misleading, in spite of the requisite references. The directions for colotomy are, moreover, inexact, and, as to some points, incorrect.

The concluding department of the volume and work is composed of a miscellaneous collection of subjects, some of which are in their appropriate places, while others were evidently the stragglers in the original act of publication.

We are disposed to sympathize strongly with the reviser of Birkett's article on Diseases of the Breast. As might be supposed, the value of such an article depends chiefly upon the thoroughness with which that part relating to the surgical pathology of the breast has been made to correspond with modern views. Dr. McGraw has succeeded in giving a very excellent summary on these points in the brief space which has been

allotted to him. We could have wished that this article, like the one which follows on Diseases of the Skin, had been entirely rewritten.

Dr. Van Harlingen has attempted to cover the entire ground in this specialty, rather than to confine himself to such portions as belonged strictly within the domain of surgery. Due attention has been given to the practitioner's wants, the text being well filled with directions for treatment and prescriptions. The article on Eczema occupies considerable space, as it should, and seems to us a most valuable one for reference. There are some interesting cases of neuroma cutis, with illustrations of the microscopic structure reproduced from Duhring's book, but we do not find mention of the investigations of Recklinghausen on this subject which have recently appeared. We notice the use of the term anthrax in connection with carbuncle, instead of malignant pustule, where it rightly belongs. The author, we are glad to see, is in favour of the use of the dermal curette, but does not urge it sufficiently strongly in epithelioma. Its advantages in the superficial forms of this disease, over the knife, are great, in that it saves the greatest possible amount of healthy tissue; but it is usually necessary to follow up its use with caustics, or the cautery. Caustics alone should only be used when it is quite certain that the entire disease will be reached by the agent, otherwise the portion left is likely to be stimulated into an unnatural activity. Dr. Van Harlingen has had the good taste to quote from American authors, when possible, and it is gratifying to see how much work has been accomplished by them since dermatology became a recognized specialty in this country.

The articles on parasites and venomous insects have been entrusted to Dr. Leidy, whose additions are confined to the former. We notice some interesting remarks on the introduction of the guinea worm through drinking water; also a description of the filaria sanguinis, and the long list of diseases ascribed to it. It seems that the mosquito is supposed merely to transfer the worm to water, from which those drinking it become affected.

The article on the Surgical Diseases of Childhood, which originally appeared in the appendix, was written by Messrs. Holmes, Broadhurst, and Shaw, and is now revised by Dr. Samuel Ashhurst. It was probably added by the editor to fill out certain deficiencies which became apparent as the successive volumes appeared. We do not think such a subdivision of any special practical value, and we can readily see, and, indeed, have personally experienced the disadvantage to the reader, who is unaware of this unusual arrangement. The account of malformation of the rectum and anus, for instance, which is particularly well given, might easily be overlooked by one who naturally seeks for such information under diseases of the rectum. The illustrations of this subject are, by the way, of unusual interest, figure 953 showing the so-called paradox of M. Huguier, or the position of the sigmoid flexure in the right groin of an infant, on whom colotomy had been performed in the left groin. The reviser has found extremely few additions to make. The next article on Surgical Diagnosis and Regional Surgery is also, in our opinion, one of those articles which few read and no one refers to. There are a certain number of topics which it should be the duty of the editor to look out for, and to work in the text in their appropriate places. The few instruments described, as the clinical thermometer, the sphygmograph, could easily be inserted elsewhere, and as the whole System is arranged on a basis of regions, we fail to see the *raison d'être* of a special article on that subject.

The closing chapter on Hospitals has been enriched by a very valuable

paper by Dr. Norton Folsom, who was one of the gentlemen selected by the Trustees of the Johns Hopkins Hospital, to prepare the volume on Hospital Construction and Management. The reputation made by our countrymen during our late war has been well sustained by the progress made in the construction of our civil hospitals since. The remarks on the site and drainage of hospitals show how high an estimate is placed upon a proper attention to those parts of the building which do not appear above the surface, and impress also upon the reader how much we still have to learn about these vital problems. Dr. Folsom's remarks on the form of hospitals are specially interesting, as embodying the views of those who have made a study of recent improvements. He says of the present popular method: "Those who consider some sort of pavilion plan the only justifiable method of construction, are by no means agreed as to whether they should consist of one or two stories." The merits of each plan are briefly and clearly stated. A good word for the now popular training-school for nurses, and on the importance of placing a medical man in the position of superintendent, who, as he quotes Dr. Billings, should be the health officer of the hospital, closes the volume. J. C. W.

ART. XXI.—*Annual Report of the National Board of Health, 1879.*
8vo. pp. 477. Washington: Government Printing Office, 1879.

THE first annual report of the National Board of Health, recently issued from the Government printing office at Washington, is a bulky volume of 477 closely printed pages, containing a vast fund of useful information upon some of the most important sanitary topics of the day.

The publication of this report marks an era in the history of sanitary legislation in the United States. It chronicles the birth of an organization of which there has long been a pressing need, as indicated by the hearty response and strong coöperation with which it has met from all parts of the country and by the eager confidence imposed in it by the people; and which bids fair to become a mighty power in the land for good, not only by the judicious exercise of its functions of investigating the preventable causes of disease, accumulating precise information, and disseminating the best knowledge and advice upon all subjects relating to public health and hygiene, but also by the performance of important services in connection with the administration of sanitary law. It has already established its claim to usefulness by its active and practical efforts in systematizing and regulating inland and maritime quarantine practice, according to the most advanced knowledge on the subject; by giving warning and advice and furnishing aid in times of public peril; by encouraging and coöperating with State and local movements in the interest of public health; by the methodical pursuit of scientific investigation of sanitary questions, of individual, local, and national importance; by its strenuous efforts for the attainment of uniformity in sanitary legislation, organization, and practice, especially in the methods of collecting and reporting vital statistics; and by the establishment of a weekly bulletin as a medium of diffusing information.

In scanning the report one is impressed with feelings of surprise and

gratification at the amount, diversity, and importance of the labour performed by the board during the brief period of its first year's existence. These results could hardly have been expected had not its members been well qualified for the duty by previous special training.

The volume consists of the report proper, which is a brief and concise statement of the operations of the board during the year 1879 under the provisions of the Acts of Congress of March 3d and June 2d of the same year, and of a series of voluminous reports and papers, mainly by experts, upon subjects wisely selected from among those claiming the earliest consideration and investigation. The reports and papers, which are elucidated by numerous maps, charts, and diagrams, are grouped together under proper headings and arranged in the form of appendices. These constitute the main bulk of the volume.

Appendix A refers to the organization of the board under the Act of Congress, approved March 3, 1879.

Appendix B contains the preliminary report of the Havana Yellow Fever Commission, consisting of Dr. S. E. Chaillé and Col. T. S. Hardie, C. E., of New Orleans, Dr. John Guiteras, of Philadelphia, and Surgeon George M. Sternberg, U. S. A. It consists of forty pages of closely printed matter and statistical tables, and is replete with information, which, though not really novel, will be of great value in arriving at a better understanding of the history, causation, endemicity, and mode of propagation of yellow fever in the island of Cuba, and the means of preventing the introduction of the cause of the disease into the shipping at Cuban ports.

The report embraces a study of the principal ports of Cuba and of their commercial relations to the United States; the endemicity of yellow fever in Cuba, and the causation of this endemicity; the means of improving the unsanitary conditions of Cuban ports, and the measures which can and should be adopted to prevent the cause of yellow fever from affecting the shipping at Havana, Matanzas, and other Cuban ports, and its transportation to the United States. The results of a series of investigations are presented, which were undertaken with the view of shedding light upon the obscure subject of the causation of this disease. They are detailed under the heads of examination of the blood in yellow fever, experiments upon animals, culture experiments, examination of the water of the harbour, and examination of the air. A brief synopsis of morbid anatomy and pathological histology, and a report by Dr. Chas. Finley, of Havana, on the increased alkalinity of the atmosphere during the prevalence of yellow fever, complete the subjects of the report.

It may be considered as established, that yellow fever is endemic in the Island of Cuba, the history and evidence showing that it has been persistently prevalent in Havana every year since 1761. Strong evidence has also been brought forward to disprove the theory of the spontaneous origin of the yellow-fever poison on board ships, and also to prove beyond question that this poison is on the shore and not in the water of the harbour. The chief thing to be done is to eradicate the disease from Cuban ports, but in this matter the United States has no jurisdiction. The main dependence must, therefore, be placed in palliative measures, such as the application of means to prevent the introduction of the cause of yellow fever into the shipping, and of eradicating the poison after it has been communicated to vessels, and of preventing such vessels from being sources of infection to other shipping and places. In pursuance of this object Congress passed the law of June 2, 1879, elsewhere noticed, which, if it had been per-

mitted to be enforced, would have been a most important, progressive step toward the solution of this latter problem. This measure was rendered inoperative through the non-concurrence of the Spanish Government, and now an effort is being made to secure an agreement, among all maritime nations interested in the enforcement of the act, upon an international sanitary code; or, if this be not at once practicable, then, at least, upon the establishment of an international system of notification as to the sanitary condition of ports and vessels.

Appendix C contains a preliminary report by Prof. Ira Remsen, of Baltimore, of an investigation concerning the best method for determining the amount of organic matter in the air, which is of some special interest.

Next follow two valuable reports, contained in Appendices D and E; the one by Prof. C. Lewis Diehl, on the Deteriorations, Adulterations, and Substitutions of Drugs, to which a bibliography is appended; and the other by Dr. R. C. Kedzie, on the Adulteration and Deterioration of Food. Prof. Diehl's report covers sixty pages, and includes tables showing the principal inferiorities of drugs, such as adulterations, substitutions, etc., recorded in the current literature of the United States during the past twenty-five or thirty years; the causes of such inferiorities; and also a fragmentary list of drugs rejected at the different custom-houses since 1848. There is also contained in the report a draft of a proposed law to regulate the practice of pharmacy and the sale of poisons, and to prevent the adulteration of drugs and medicines.

On the authority of Dr. M. I. Bailey, special examiner of drugs, nearly one-half of the drugs imported into New York before the year 1848 were of a worthless description. In that year Congress passed a law regulating the importation of drugs, and designed to exclude inferior and sophisticated drugs and medicines, which operated remarkably well during the first five or six years of its application. Subsequently, however, its execution, from one cause or another, became more or less inefficient and inadequate at various periods of its existence, and, had not the powerful influence of the American Pharmaceutical Association been persistently exerted in directing attention to abuses connected with the execution of this law, and in shaping the condition of the drug market, the law in all probability would, practically, have become a dead letter. As it is, there is the greatest room for improvement, and a careful revision and extension of the law are greatly needed, as Prof. Diehl has amply demonstrated.

While the Government can, to a very great extent, ameliorate the abuses in the drug trade by preventing, or reducing to a minimum, the introduction of inferior drugs and medicines from abroad, and by exercising a general supervision over commerce in such articles, it is powerless to reach the inferiorities that are produced at home. Says Prof. Diehl: "Congress has no power to pass a general law bearing upon this subject that shall have equal application in all the States." In this country, measures which shall restrict and prevent the sale of impure and adulterated drugs at home "must necessarily be enacted by the legislatures of the States to which they are to apply, and will be effective throughout the United States only if uniform action can be had in this direction in every State."

Many States have laws upon the subject which are very imperfect, and more or less obscure, and lack suitable provision for their enforcement; therefore, they are, in great measure, inoperative.

What is needed is uniformity of action throughout the United States,

and if, as suggested, the General Government were to enact a law for the District of Columbia, similar to the rough draft of a proposed law prepared by Dr. Squibb and presented with this report, to serve as a type for similar enactments in the different States, the proposed end might be accomplished. Independent of legislative enactments, the greatest good is being accomplished by the use of moral and educational means, such as have been employed by the American Pharmaceutical Association and kindred organizations. Both of these forces are required to effectually modify or prevent adulterations in drugs and food.

Dr. Kedzie's report relates solely to the discussion of the subject of the deterioration and adulteration of the principal substances used for human food in the United States. If we mistake not, the investigation of the general subject of these reports has been continued by the National Board of Health, and the results obtained have formed the basis for the elaboration of a proposed law which has been freely indorsed throughout the United States by men specially qualified to judge of the subject, and is now awaiting the action of the National Assembly, having been favourably reported, with some amendments, by a Congressional committee.

The next appendix, marked F, contains a report by Prof. James Law, of Cornell University, on the Diseases of Domestic Animals; and one by Dr. T. S. Verdi, of Washington, on Cattle Disease in Relation to the Health of Man and in Political Economy. Prof. Law considers briefly in his report: 1st, such animal diseases as determine specific and communicable disorders in man; and 2d, the affections of the domestic animals which are not communicable to man, but are transmissible from animal to animal, so as to constitute veritable plagues which tend to undermine our agricultural prosperity. He shows how highly important it is that the functions of the National Board of Health should embrace a superintendence of the sanitary condition of the domestic animals. For this object he advises that there shall be associated with the board one or more veterinarians, whose special duties shall be to consider all matters in which the health of the lower animals affects man; "to advise as to the enactments and administration of State laws for the prevention and extinction of plagues and parasites common to man and animals; to conduct experimental researches into the source, propagation, and extinction of these disorders and parasites of animals, and to act when necessary in an executive capacity in the exclusion or control of these scourges." He also recommends that the subject relating to "the exclusively animal plagues and the parasites that affect animals only should be committed to an organization drawn from stock-owners and the veterinary profession;" and that the whole question of animal sanitation be thus placed under the direction and supervision of the National Board of Health, as the most economical, efficient, and satisfactory medium of conducting this important service.

In the discussion of the subject of cattle disease in relation to the health of man, and in relation to political economy, Dr. Verdi points out some of the common sources of danger to health from the consumption of diseased or unsound meat, and also the immense loss these diseases entail upon one of the most important industries and sources of wealth of the country; and he proposes a plan for a national organization for the prevention of cattle disease and the sale of unwholesome meat. The Government has undoubtedly a great duty to perform in regard to this matter, and it is creditable to the National Board of Health to have agitated a subject of such vast national importance, and which hitherto has been too much neglected.

A very brief preliminary report upon the Gauging of Sewers, by Col. Waring, of Newport, R. I., will be found in Appendix G. The object of the investigation is, as stated by Col. Waring, to determine the pipe capacity needed for the discharge of domestic sewage. The investigation, so far as it has progressed, has developed results which tend to sustain the view, that a system of sewers in which the sizes are adjusted to the removal of foul wastes only, is preferable from a sanitary point of view, and is likewise more economical. As Col. Waring promises to furnish an exhaustive report upon this subject, it will be judicious to withhold further comment until after its publication. We may remark, however, that upon the results of this investigation has been based the recommendation of a scheme for the sewerage of Memphis, which has been put into practical operation, whereby it has been estimated there will be a saving of \$275,000 on the first cost, in comparison with sewerage works constructed in the usual manner. The verdict of time will be awaited with much interest.

The next Appendix, marked H, is devoted to Schedules of Questions for a Sanitary Survey of Hudson County, N. J., and Bayonne, N. J. It covers sixty-eight pages of the report, and comprises questions and answers, tabular statements, statistical records, and some illustrations; the whole furnishing a very exhaustive statement of the sanitary condition of these places. The list of subjects contained in the twenty schedules embrace the following: Location, population and climate, topography, water-supply, drainage and sewerage, streets and public grounds, habitations, gas and lighting, garbage and excreta, markets, slaughter-houses and abattoirs, manufactories and trades, public school buildings, hospitals and public charities, police and prisons, fire establishments, etc., cemeteries and burial, public health laws, regulations and municipal officials, registration and statistics of deaths and of disease, quarantine, and municipal sanitary expense. The results of the survey are of very special local interest, and also possess some general value; but the main object of their presentation in the report is "to serve as suggestions to those engaged in inquiries relating to municipal sanitation, and to form the basis of reports to the National Board of Health upon the sanitary conditions of a place." Any one contemplating work of this character will profit by first consulting this instructive and comprehensive guide.

Appendix I contains the preliminary report of a special committee of the National Board of Health, consisting of Drs. J. S. Billings, H. A. Johnson, and R. W. Mitchell, appointed to conduct a sanitary survey of the city of Memphis, at the request and with the aid and coöperation of the local and State authorities. This action was rendered necessary in view of the calamitous visitation of yellow fever, which in 1878 caused 2779 deaths, and in 1879 as many as 497 deaths, in a population of 35,000 nominally, but which, in fact, is an over estimate, as an exodus of citizens occurred soon after the commencement of the disease.

The survey was conducted in the winter of 1879 and 1880, and embraced in its scope a thorough house-to-house inspection, the subjects of the water-supply, drainage and sewerage, town cleansing, removal of excreta and other waste matters, mortality records, and other questions of like importance. Upon the data thus obtained has been founded a tolerably complete sanitary history of the city of Memphis, which, as a guide to the correction of evils, was immediately productive of the greatest good, and which will serve hereafter the valuable purpose of a record for refer-

ence. Some idea may be formed of the magnitude of the work by the statement contained in the report of Dr. F. W. Reilly, inspector in charge, that the inspection returns filled 96 folio volumes, covering 9508 inspections, and the tabulation of returns 4 royal folio volumes, containing 176,433 different entries. "On these sheets it is believed every structure and individual lot of ground within the corporate limits of Memphis is succinctly described, with its sanitary history at date of inspection."

A paper by Dr. Charles Smart, U. S. A., on the practical results of an analysis of the water-supplies of Memphis and of certain towns and villages in Mississippi and Tennessee concludes the report of the committee charged with making a sanitary survey of Memphis.

Dr. P. H. Bailhache, Surgeon U. S. Marine Hospital Service, furnishes in Appendix K a report on the Hygiene of the Mercantile Marine, with certain recommendations having reference to measures deemed expedient for the improvement of the sanitary condition of this service. The report is a digest of facts obtained mainly by means of a circular letter addressed to medical officers of the marine hospital service, stationed at the principal ports of the United States. The information thus secured is classified under various headings, the principal of which relate to the ventilation of quarters on shipboard, water-supply, food, duties of officers and men, care of seamen during voyage, provision for safety in time of storm or shipwreck, the various questions relating to seamen while on shore, as habits, lodgings, shipping agents, etc., preventable diseases, physical examination of seamen, homes for disabled seamen, apprentices; also the sanitary needs on board ship, hospital accommodations, and accommodations for female and infant passengers. Then follows a brief statement of existing legislation on the subject under consideration. And the report concludes with recommendations for the improvement of the sanitary condition of the merchant marine, based upon the data obtained by the investigation. The subject is an important one, and merits earnest and thoughtful consideration.

The report of Dr. E. Harris, of New York (see Appendix L), on an outbreak of Malignant Diphtheria which occurred in May and June, 1879, in the township of Newark, Caledonia Co., Northern Vermont, presents a unique and concise history of the rise, progress, and decline of a very destructive epidemic disease among the thrifty inhabitants of a mountain district hitherto enjoying a reputation for salubrity. The opportunities for studying the agencies and conditions by which diphtheria produces its ravages and tends to become epidemic, and for testing the efficacy of properly administered sanitary measures in preventing the contagious propagation and prevalence of the disease, were exceedingly favourable; and the occasion has been turned to fruitful advantage by timely and intelligent investigation. The results of the inquiry, as presented by Dr. Harris, show that diphtheria is liable to appear in almost any region, from causes which are as yet imperfectly understood; that the virus being present, the virulence of the infection and the malignant progress of the disease are greatly intensified by the presence and coöperation of insanitary conditions; and that its contagious propagation and malignant prevalence may be prevented or restricted by the timely adoption of adequate sanitary measures. The experience gained by this recent and severe outbreak of diphtheria is a fresh argument showing the necessity of the establishment of a central authority charged with a supervision of the sanitary interests of the State, and always ready to advise and direct measures for the safety of the people in time of imminent peril.

As provided for in the constituting act, the National Board of Health has advised with the principal sanitary organizations and sanitarians in the United States and with the National Academy of Sciences, relative to the best plan for a national public health organization, the subject of quarantine, both maritime and inland, and the relations which should exist between State and local systems of quarantine and a national quarantine system claiming especial attention. The results of the consultations and conferences, briefly summed up on pages 6, 7, and 8 of the report, have established a clearer conception and knowledge of the whole subject than could otherwise have been obtained, and have been largely influential in determining the character of the operations of the board, and in giving shape and support to their recommendations.

Special attention has been given to the elaboration of a system of quarantine regulations, agreeably to the provisions of an act approved June 2, 1879, entitled, "An Act to prevent the introduction of contagious and infectious diseases into the United States." Rules and regulations as contemplated by the act were prepared without delay, and approved by the President, June 26th (see Appendix M); but, unfortunately, they were rendered inoperative by the unwillingness of the authorities of certain ports where contagious or infectious diseases had existed or did exist to permit of their official promulgation, and also by the refusal of captains or owners of vessels at several ports of other powers to supply themselves with the bills of health required by these regulations. This failure in administration proved conclusively the need of an international system of quarantine, and accordingly the initiatory steps were immediately taken for convoking an international congress for the purpose of securing, "by international agreement, a reliable and satisfactory system of notification as to the actual sanitary condition of maritime ports so far as regards the existence of contagious and infectious diseases in such ports."

Without such coöperation no satisfactory system of maritime quarantine is possible, and no effort should be spared to secure it.

In addition to the rules and regulations above mentioned, the board prepared certain sanitary regulations for quarantine stations, vessels, railroads, etc., which were issued to State and municipal health authorities, and have been adopted with advantage by a number of State and local boards of health (Appendix N). The experience gained by the rigid test of the first summer suggested modifications and improvements in these rules, which have since been made, after consultation with State and local authorities. The effort of the National Board to perfect, so far as practicable, a uniform system of inland and maritime quarantine regulations, to take the place of the various conflicting, and, in many cases, inefficient regulations prescribed by the different State authorities, is a movement in the right direction, and its progress leads to the belief that it will eventually meet with general approval.

As a preliminary to a full knowledge of the actual conditions and necessities of the various quarantine stations of the Atlantic coast and Gulf of Mexico, it was early determined to employ a number of inspectors charged with the responsible duty of investigating the sanitary condition of these places, and of observing the practical operation of the quarantine regulations.

The results of these observations and inquiries have been embodied in a series of reports which are presented in Appendices, marked O and P, the latter specially relating to the quarantine at New Orleans. These

reports cover the remaining 170 pages of the volume. It would be impossible with our limited space, and indeed is unnecessary, to go into the details therein presented; it will suffice our object to refer to some of the leading features and prominent recommendations. It is not expected, in so extensive an undertaking as that embraced in an investigation of the sanitary condition and necessities of the ports of the entire Atlantic and Gulf coasts, that the work would be exhaustive. Sufficient, however, has been obtained to serve as an intelligent guide for the National Board in directing future quarantine measures, and to form a valuable record for reference.

Special attention is called to the able report of Dr. Elisha Harris, embracing the district from Portland, Maine, to New York City. It would appear that a portion of the report has been omitted, and that certain data for which space has been reserved, have never been supplied. With the exception of these defects, the report with its large number of maps and charts (25), and numerous diagrams, is a very creditable document, which will be of great value for future reference. In its scope and fulness, it partakes somewhat of the nature of a sanitary survey. The geology, sanitary topography, drainage and sewerage, water-supply, town cleansing, statistical records, sanitary government, and quarantine history with special reference to yellow fever and cholera, are alluded to sufficiently in detail to give one a very good general knowledge of the subject. The experience gained by the investigation leads to the conclusion, that the danger to the public health in ports and cities on the North Atlantic coast is far more perilous from local sources of disease than from any causes which lie beyond local control; though there is none the less need of maintaining the proper sanitary defences against the introduction, distribution, and propagation of disease from without. The conclusions on pages 328-331 will be read with advantage.

We regret that we are not able to speak as favourably of some of the other reports. Those embracing New York City, Philadelphia, and Baltimore, by Dr. E. M. Wight, furnish merely a brief description of the quarantine stations, the plan of their management, expenses, etc. Fuller descriptions of the remaining stations on the coasts with some allusion to their sanitary conditions and surroundings, and the more pressing needs of the quarantine service, are furnished in the rest of the papers. Some of these are disjointed and fragmentary, and partake more of the nature of a collection of correspondence rather than a clear, concise, and systematic presentation of the results of the investigations. The crude material has, however, been furnished in abundance, and he who is sufficiently interested in the subject to devote the time necessary for culling out the most important facts, will be amply rewarded.

The common evils of the day, such as bad drainage and sewerage, unsatisfactory and neglected removal of refuse matters, impure water-supply, pollution of air, soil, and drinking-water by storage of excreta upon the premises, bad pavements and inefficient street cleaning, are no exceptions in the ports and places visited on the South Atlantic and Gulf coasts. These insanitary conditions are the chief influences which threaten the public health, and tend to favour the propagation of diseases which are occasionally introduced from other localities. In no places were the quarantine defences found abreast with the requirements of the times. In some instances, Dr. Bell, the sanitary inspector, was able to suggest improvements, which were courteously received and adopted. In others, the

data collected, and recommendations were referred to the National Board of Health for more deliberate consideration.

The remaining reports refer to the sanitary inspection of places on the Atlantic coast of Florida, and on the Gulf coast from Key West to the Rio Grande. The inspections were made by Drs. Elliott, Cochran, Palmer, Johnson, Pope, Wight, and Bell. In some instances, there are reports on the same places by several different officers. The special interest centred in this portion of the coast line on account of its association with the history and spread of yellow fever, and the facilities for intercourse with Cuba, necessitated a very thorough examination, even of places of small population and of little commercial importance.

The results of these investigations demonstrate conclusively the necessity of national supervision over quarantine regulations, as conducing to, and securing, a more uniform, efficient, unprejudiced, and least onerous and expensive administration of the offices of quarantine stations. Such supervision is particularly applicable to stations situated at, or controlling the entrances to the great commercial highways of the country, through which, mainly, contagious or infectious diseases are liable to be introduced from abroad; as, for example, at the mouth of the Mississippi, at Key West, on the south Atlantic coast, at the mouths of the Chesapeake and Delaware Bays, and at New York and Boston harbors.

The whole report is a very commendable production. The tardy publication of the volume would have been more objectionable had not the weekly bulletin already supplied much of the information now compiled in this work. A more extended index would have been appreciated by the reader. The proof-reading might have been more accurate, and the mechanical execution of the book more creditable. With these exceptions, we have nothing but praise to bestow upon this record of the results of the first year's labours of the National Board of Health.

W. H. F.

ART. XXII.—*On Cancer of the Breast.* By THOMAS WILLIAM NUNN, F.R.C.S., Eng.; Consulting Surgeon to the Middlesex Hospital. 4to. pp. xiv., 230. London: J. & A. Churchill, 1882.

SUCH books as this one can only emanate from the elders in the profession, and it is eminently fitting that from them such volumes should come. Its conclusions are based upon a wide experience, and are therefore entitled to a most respectful consideration, while the practical tone of Mr. Nunn's remarks, both upon theory and practice, cannot fail to commend them to those who are interested in the subject.

We propose to follow Mr. Nunn through the practical portion of his work in some detail, treating the theoretical and pathological part with less minuteness, not as less important, but as less firmly established, and still *sub judice*.

In a brief and tersely expressed introduction of some fourteen pages, Mr. Nunn has given his views upon the nature of cancer. He regards it as essentially an ineffectual effort at development which ends in the production of tissue monstrosities, in which there is no order, but all is in con-

fusion, the very varied appearances presented being in fact divergences of normal tissue, modified by exaggeration, by defect, by malposition, or by eccentric combination. Mr. Nunn thinks that the latest researches do not enable us to go further in our definition, and that while the course, progress, and termination of the disease have been made plain by observation, it yet remains to be determined how it begins, and what are the starting-points from which ensue the modifications of normal structures.

It is the opinion of our author that a more efficient and valuable classification of cancers will be obtained by striving to mark the points of resemblance existing between the different forms, rather than by directing attention to the differences so evidently existing. In this way we may get back to the starting-point, to the initial and essential lesion. We know that embryonic development proceeds from a simple cell, and as we account for the varied appearances presented by cancers upon the theory that it is essentially an attempt at development, we may hope yet to trace the disease back through all variations to its beginning.

Establishing himself upon this hypothesis, made highly probable by observation, Mr. Nunn is inclined to look upon cancer in any part as a modification of that part rather than as something extraneous or heterologous. As the human organism is composed of an aggregation of units, which may at any time be deformed by accidents, or unknown causes, and which all ultimately terminate in degeneration and death, so the as yet unknown influential cause of cancer may at any time bring about this deterioration of form, and retrograde change in any part.

Despite the very varied appearances presented by cancer in the different tissues, microscopical investigation enables us to demonstrate certain invariable characteristics. Thus, whenever we find cancer, we find innumerable cells in the stroma of the organ, with very active reproductive, and but very little developmental power; we find an active attempt to reproduce tissue like that of the organ in which the disease exists, but the attempt is abortive, has stopped short of perfection, premature degeneration has been established, and a grim caricature of the normal process has resulted. Not only has the new cancerous tissue a strong tendency to atrophy and death in itself, but by its encroachments, and by the stimulus of its presence, it provokes the remaining normal tissues to similar action, and we have atrophy, molecular death, and gangrene, *en masse*, of the part.

Thus, while we have been compelled to relegate the typical "cancer-cell" to things of the past, and to recognize the fact that the normal cells of any part may become the progenitors of cancer-cells, we are yet able to maintain the identity of cancer, by its invariable characteristics and results.

After a graphic description of the cellular elements to be found in cancers, and the development of their fibrous stroma, Mr. Nunn goes on to give his reasons for thinking that we need not hesitate to assign tumours of the most different degrees of density to the same fibrous—connective-tissue—origin, when we recall its universal presence even in the most diverse normal organs. Nor does he think that the question of an epithelial, or epidermic, origin need present any difficulty in view of their close histological relation in normal parts. For, while admitting the inherent difference between epidermic and epithelial cells, he maintains that not only is there no antagonism, but a real reciprocal alliance between them. To support this he instances their union in the ovum, and the lining of a newly formed bursa, and other serous surfaces, with epithelium, which presumably must have at least a close connection with connective-tissue

cells, if it does not originate from them. At any rate they do not appear to be in any way antagonistic to each other.

While certain forms of cancer classified and described as such sometimes exist almost alone, and go to form the mass of some tumours, in very many cases these varieties are found to exist together in the same tumour. This fact causes Mr. Nunn to ask with much pertinence whether they should not all be classed together as cancer, modified by the tissue peculiarities of the part involved. In them all, however, we find the one invariable fact, that with great reproductive activity there is deficient developmental power, and we have the continued growth and the continued death, which in greater or less degree seems to be the leading characteristic of cancer.

Passing from Mr. Nunn's introduction we come to the first part of his work, which he denominates "Clinical and Pathological." Mr. Nunn's experience, coinciding with that of other observers, shows that the breast and the womb are the most frequent seats of cancer, although the proportion of cases of disease in either part will vary somewhat in different series, from peculiar circumstances. Thus, in 268 consecutive out-patient cases, Mr. Nunn noted 157 cases of cancer of the breast, and 47 of the womb; but of 1000 cases observed in the In-patient Cancer Department of the Middlesex Hospital, the proportion was different, 260 being of the breast, and 389 of the womb. In a foot-note it is explained that this difference may be accounted for from the fact that cases of cancer of the womb are admitted into the Middlesex Hospital from, probably, all the other hospitals in London.

Of 160 cases observed by Mr. Nunn, the average age of attack was 50.4, and, on page 161, he prints an analysis of his cases into quinquennial groups, compared with the average number of persons living at the respective ages. This comparison does not materially alter the results, and the greatest liability is shown to be between the ages of 45 and 49 inclusive, when the percentage rises as high as 18.006. That is, taking Mr. Nunn's 160 cases as a basis of calculation in 100 cases of cancer the disease will be found to make its attack between the ages of 45 and 49 years in 18.006 cases.

Under the head of *diagnosis*, Mr. Nunn speaks of cachexia as perhaps existing, even though it be with a "look of healthiness." Now it seems to the reviewer to be an error to allow cachexia a place among the symptoms upon which a diagnosis must depend. No doubt, in advanced stages, we find a cachectic condition, as we do also in many diseases accompanied with exhausting discharge; but the symptom has then lost all diagnostic value. Nor do we see that the "look of healthiness," to which Mr. Nunn refers as existing with cachexia, has anything to do with the matter, for certainly, if the patient looks healthy, her appearance will not aid us in arriving at a conclusion that she is suffering from cancer. Mr. Nunn has found severe pain to accompany acute cancers; while those cases which are less active may be, and often are, entirely free from it. There is another circumstance which cannot be lost sight of by the surgeon who would base a diagnosis upon so subjective a symptom as pain, namely, the varying sensitiveness of different patients, and the difference which exists in the descriptive language used by them.

In *Retraction of the Nipple and alteration of its level*, we have a symptom which, as Mr. Nunn very well shows, is of the utmost value. Thus, the nipple of the affected side will be found not only retracted, but it will

approach more nearly to the clavicle than its fellow of the opposite breast. The author of this volume says, that where this elevation has existed, he has not known cancer to be absent. Coloured discharge from the nipple he regards as very suspicious, and eczema of the nipple and areola, or that which is described as such, as another evidence of the beginning of a cancer. It will be remembered what stress Sir James Paget lays upon this fact, and how he regards it as an almost invariable precursor of cancerous disease.

Great caution is advised in giving a prognosis, as Mr. Nunn's experience has taught him that it is at first impossible to say how long will be the duration of a given case—it may be twenty years before a fatal issue is reached, or, on the other hand, the progress of the disease may be rapid, and the case terminate within twelve months.

Speaking of the progress of cancer of the breast, Mr. Nunn points out that, with all the variations which may be observed, the process is unchanged, and deposition and destruction, hypertrophy and atrophy, go hand in hand. The beautifully executed plates at the end of the volume well and faithfully present this fact. Besides the contamination of the axillary glands, and the extension of the disease to the thoracic cavity, which he regards as impending processes, Mr. Nunn speaks of the secondary affection of the cerebro-spinal system as rare, yet as comparatively more frequent in those persons who have the most highly developed nervous systems.

Upon the subject of surgical interference our author holds decided ground. Although not adhering to the theory of the local nature of cancer, he does not hesitate to advocate the removal of the tumour in selected cases. He does this upon the same basis of reasoning as is adopted by Mr. Birkett and others, that by operating we are doing at once, and speedily, what nature is striving to do by a long and painful process; that the comfort of the patient is promoted; and that in some cases there is great prolongation of life obtained thereby. The opponents of an operation hold tenaciously to the opinion of Brodie, based upon a most extended experience, that the average duration of life is shortened by removing mammary cancers, but most surgeons have met with cases in which a long immunity from the disease has followed an operation, or where its return in some internal organ has led to a comparatively painless death. It is in the hope of obtaining these advantages that Mr. Nunn counsels an operation in selected cases. Where an operation is done he is most decided in advising that the entire breast be removed; that, if necessary, the disease should be followed into the axilla; and, above all, that the incisions should be so arranged, if possible, as to allow of and insure free drainage. The hemorrhage should be efficiently controlled, and the wound dressed as speedily as practicable, its edges being brought into accurate apposition by means of sutures. While he regards the antiseptic method as yet in its infancy, and looks forward to future developments in that direction, he does not think that the spray, or rigid Listerism, is required. He has himself had much satisfaction in the use of dilute sulphuric acid as a dressing, and his observation leads him to conclude that the value of the chloride of zinc applications, at one time advocated by Mr. De Morgan, consist in their antiseptic properties. Considerable space is devoted to a consideration of Dr. Fell's method of extirpating cancerous tumours by chloride of zinc paste. This plan Mr. Nunn has tried, and save that it does not necessarily confine the patient to bed, seems to possess no advantages, and some very decided

disadvantages. It may be well to briefly describe the process here, that some of our readers who may come across patients possessing an invincible repugnance to the knife may resort to this Fell process (no pun is intended). First, the skin over the whole area of the tumour, and beyond, is thoroughly acted upon by the strongest nitric acid, for which step of the procedure, of course, the administration of an anæsthetic is required. The next day, into the tissue thus hardened by the acid, shallow incisions are made, parallel to and about half an inch distant from each other, and into each incision is packed a strip of muslin loaded with the chloride of zinc paste. These incisions are sufficiently numerous to cover the whole area of the growth. The process of deepening these grooves and packing them is repeated daily, until the depth of the tumour has been reached, when any slight attachments remaining are divided, and the whole sloughing mass is removed. Mr. Nunn has found this process in some cases painless, while in others the pain is severe and continuous, and he has not found any greater retardation of a return of the disease or a greater prolongation of life to result from any caustic process, than he has obtained by using the knife. Electrolysis, and the much-vaunted injection of acetic acid have neither proved themselves to be superior methods of treatment, in Mr. Nunn's experience.

In the treatment of the cancerous sore, Mr. Nunn has made use of many articles, both to allay irritation and diminish fetor. Iodoform, to which he gave a fair trial, disappointed his expectations, and he seems to have had more satisfaction from the use of a weak solution of sulphurous acid, applied by irrigation, than from any other, though he does not reject the use of some other disinfectants.

The remainder of the first or "Clinical and Practical" portion of the book is taken up with the narration, in more or less detail, of sixty illustrative cases. The duration of the disease in these cases varied from one to nearly twenty years. It seems to the reviewer that, in view of the long continuance of many cases of cancer, there is one important fact deducible, *i. e.*, that patients attacked by cancer, even while they know that the disease is incurable, should be encouraged to regard themselves as invalids, who, with care and nursing, may have many years of comparatively useful and comfortable life before them. Many persons afflicted with cancer may, and do, die of other diseases. It is, therefore, happy for them if they can avoid despondency, and, even while they know that the doom of death has been pronounced upon them, recognize that such a doom, so far as this world goes, impends over all; while they know that their own sentence has been pronounced, they may be assured that the same sentence will be executed upon many around them without the same formal notice.

Mr. Nunn prints tables showing the post-mortem appearances in one hundred and twenty-three cases of mammary cancer, which present some interesting facts, and are worthy of special study. We think it was an error not to furnish a summary analysis of them.

The second part of this work is designated as "Pathological and Speculative." We have read it carefully, and have felt repaid for the perusal, but the growing dimensions of this notice warn us to hasten to a conclusion. Then, as we have before stated, very many points in the pathology of cancer are as yet unsettled, and we know hardly anything more disheartening than, after having mastered the abstruse theory of an eminent pathologist on one page, to find, upon turning the leaf, that the whole scheme is pronounced and demonstrated to be a fallacy by a later and

equally distinguished observer. We shall, therefore, merely note one or two observations of our author, and feel that we have presented his own theoretical views with sufficient fulness in our analysis of his introduction.

Smokers will be glad to know that Mr. Nunn does not believe that the tobacco-pipe can produce a cancer where the predisposition does not exist. An interesting feature is a cancer-map of England, showing the birth-places of patients suffering from the disease, and proving the statements of Mr. Moore and Mr. Haviland, that it is much more prevalent in the southern part of the island.

In this part of the book will also be found a very valuable summary of the views of many distinguished modern English and European authors. In an appendix, space is given to an exceedingly interesting abstract of the important discussion upon cancer at the London Pathological Society, in 1874, which is also conspicuous for the very widely different opinions expressed by some of the best men in the profession who took part in it.

It remains for us but to speak of the illustrations which conclude the volume. They consist of twenty-one coloured lithographs, six being portraits of the gross appearances in typical cases of cancer of the breast, while the remainder represent the microscopical appearances of cancer in various parts of the body. They are admirably executed, and are in keeping with the general appearance of the volume, which, with its good print, liberal margin, and heavy paper, is entitled to a place among the handsomest of recent surgical publications.

S. A.

ART. XXIII.—*A Manual of Obstetrics*. By A. F. A. KING, M.D., Professor of Obstetrics and Diseases of Women and Children in the Medical Department of the Columbian University, Washington, D. C., and in the University of Vermont, etc. etc. 12mo. pp. 325. Philadelphia: Henry C. Lea's Son & Co., 1882.

THIS small duodecimo volume is one of the smallest and most condensed of all the *multum in parvo* obstetrical treatises which have come under our observation in several years past. As it is confessedly prepared in large measure from the standard works of Professors Playfair, Leishmann, and Lusk, its merit as a manual depends very much upon the power of condensation possessed by its author, and the closeness of his adherence to the teachings of these three obstetricians. For an ability to convey instruction in few words, we will give Prof. King all due credit, as in this respect his little book is quite a success. We will, in our examination of it, however, point out a few sections which appear to require attention.

The cause and prevention of perineal laceration is treated by the author according to the views of some of our best writers; still he does not reach the root of the matter entirely. Why does the perineum give way? This is a question that has several answers according to circumstances. Take an actual case. A lady was five times delivered with ease in this city by an able accoucheur, by the aid of the forceps, without any giving way of the perineum. On a sixth occasion she delivered herself hurriedly and alone of a small child, and tore her cervix open, and her perineum into the

rectum. Here the parts must have become lacerated, because they had not had time to perfect the softening process which takes place in them during the progress of labour. Although supporting the perineum, as formerly taught, may not be required, laceration may often be prevented by resisting the passage of the child during a pain or two, and at the same time cautioning the mother not to bear down. When violent uterine and abdominal contractions come on, with an irresistible inclination to bear down, the exit of the head must be resisted by the accoucheur, if he finds the perineum thinned under the pressure until almost on the point of giving way. After such a distension, the parts will yield with safety in a pain or two. After such a narrow escape, there is a second danger to be apprehended from the unequal pressure produced in the delivery of the sacral shoulder. Take another case. We have recently been consulted in one where rupture took place in the birth of a first child to such an extent as to tear up the rectum about three inches. The fœtus was a female of ordinary size, but the vulva of the mother was unusually small, and the vulvo-rectal space very short. Had the parts been pared and sewn up an inch and a half from the anus, the vagina would have been nearly closed. Besides a disproportion between the head of the fœtus and the vulvar outlet, there is the toughening of the parts produced by age; and in some instances a weakening of the tissues of the perineum. In the last event, claimed by many observers, there is no measure of prevention that will avail.

It is hardly worth while to mention the subject of symphysiotomy in a manual; but as the author has, we must correct him when he says, "that it has been abandoned and become obsolete," page 191. There were forty-nine operations as far as known in the world during the first era of this method of delivery, and there have been fifty in Naples since its revival in 1869.

Of the Cæsarean section he writes (page 192): "The percentage of maternal recoveries, *under the most favourable circumstances*, is roughly about fifty per cent. The results of statistics notably unreliable." In our own country the recoveries under the circumstances named have been seventy-five per cent. In Great Britain scarcely above the average of all their cases. The reliability of our American statistics is defended in a special article in this number. Those of Continental Europe are such as he claims.

The Porro operation is not such as he describes on page 195. He says: "The ovaries also are sometimes taken out." Porro calls his modification a "utero-ovarian amputation." The cervix is not transfixed and wired each way in the original operation, but surrounded by a wire loop tightened in the *serre-nœud* of Cintrat. The broad ligament also is not cut on either side of the uterus. The number of operations, as far as ascertained, is eighty-four, and recoveries thirty-seven.

For the relief of ante-partum hourglass contraction of the uterus, he does not mention the claim that has been made for success with the nitrite of amyl.

The volume is neat in appearance, well illustrated, and will answer as a remembrancer for students of medicine and those wishing to hurriedly refresh their memories on obstetrical manipulations and methods.

R. P. H.

ART. XXIV.—*Transactions of the American Ophthalmological Society. Seventeenth Annual Meeting.* 8vo. pp. 317. New York, 1881.

THE first paper is by Dr. WM. F. NORRIS, of Philadelphia, *On the Administration of Anæsthetics in Bright's Disease of the Kidneys, and on Some Cases of Sudden Death after Cataract Operations*, in which the author records two cases of death supervening unexpectedly after operations for cataract. "They present four features in common: 1st. They were both anæsthetized with sulphuric ether; 2d. They entirely recovered consciousness; 3d. They died comatose—one a few hours, the other eighteen days after the operation; 4th. In both cases a careful autopsy revealed no organic lesion, except Bright's disease of the kidneys;" and both deaths are attributed to the same cause—congestion induced in diseased kidneys by the administration of ether.

The first case was that of a child five months old. The patient recovered consciousness sufficiently to nurse, but remained fretful, and two hours after the operation, had a convulsion, followed by others, and died comatose in four hours. The only lesion found, on *post-mortem* examination, was fatty degeneration of the kidneys. Reference is made to statistics, which prove that Bright's disease of the kidneys is not infrequent in infants.

The second patient was a lady sixty-eight years old, apparently in good health. She recovered readily from the anæsthesia, and the eye did well, but there were unfavourable general symptoms—slight fever, thirst, quick pulse, coated tongue, and diminished quantity of urine, passed frequently.

The urine had a specific gravity of 1008, and contained a small amount of albumen, and the microscope showed fatty and granular casts. Death, preceded by coma, occurred on the eighteenth day after the operation, and the kidneys were found to be decidedly granular.

A case is also reported in which a patient with fatty kidneys died twelve days after an operation for cataract, performed without anæsthesia, and the importance of this kidney complication in all operations for chronic diseases is discussed.

In a report of *One Hundred Cases of Cataract Extraction with a Single Failure; with a Discussion of the Advantages of Non-Anæsthesia in this Operation*, Dr. HASKET DERBY, of Boston, gives the statistics of two hundred cases of cataract operated upon with ether and of a similar number without ether. Of the 1st class there was in 81 cases vision of $\frac{1}{16}$ or more; in 8 cases $V. = \frac{1}{12}$ to $\frac{1}{64}$; in 2 cases result still undecided: and in 9 total failure. Of the 100 patients operated upon without ether, 89 gained vision of $\frac{1}{16}$ or more; 9 from $\frac{1}{12}$ to $\frac{1}{64}$; one awaited a secondary operation; and in the case of one only was the operation a total failure. This is an unusually good showing, and is strong proof so far as it goes; but more extended statistics will be necessary to make out a positive case against anæsthesia. Dr. Derby uses eserine before operating, and insists that, unless some complication demands it, the eye should not be opened for at least a week after the operation.

Dr. B. JOY JEFFRIES discusses *A Peculiar Expression of the Eyes of the Colour-Blind*, to which attention was called some years ago by Professor Wilson, of Edinburgh, but which has not been mentioned by any other of the now very numerous writers on the subject of colour-blindness. As we have failed to seize upon anything definite which would enable us

to describe this expression, we must let the authors speak for themselves. Professor Wilson says of four cases, considered somewhat typical: "One has an absent, anxious glance, with something of the expression which amaurosis gives, only the pupil is small. One has a startled, restless look. The other two have an eager, prying, aimless air. The character common to them all, and to the others I have seen, is this aimlessness of look." Dr. Jeffries adds to this that "there is a certain liquid look to the eyes, as if slightly suffused." Professor Wilson invokes the aid of Macbeth to describe it, with—

"Thou hast no speculation in those eyes
Which thou dost glare with,"

while Dr. Jeffries, with the practical tendency attributed to his countrymen, illustrates the effect of this peculiar look by an anecdote of a colour-blind schoolmaster, who, by means of it, promptly quelled the turbulence of a hall full of roistering boys.

We are not prepared to deny that this very peculiar expression is a scientific fact, but are inclined to think that its recognition will require a good deal of experience and, perhaps, some enthusiasm.

Dr. WM. S. LITTLE, of Philadelphia, reports *A Case of Persistent Hyaloid Artery*, with excellent illustrations by Dr. J. M. Taylor. Dr. L. thinks that the vessel, which doubles upon itself and joins the retinal vessels, contains blood.

Dr. JOHN GREEN, of St. Louis, Mo., describes *An Operation for Closed Pupil with Anterior Synechia, using the Pince-ciseaux of Wecker*. The anterior chamber was opened by means of a Graefe cataract knife, the synechia was divided with the Wecker scissors, and one blade of the instrument was passed through the opening thus made in the iris, and the iris, lens-capsule, and newly formed tissue were cut by a single closure of the blades. Useful vision was obtained.

A case of *Congenital Paralysis of both Abducens and both Facial Nerves* is reported by Dr. G. C. HARLAN, of Philadelphia. The complete congenital paralysis of these two nerves, widely separated in their course after they leave the brain, points to a central cause, and supports the view that they arise from the same nucleus; while the preservation of taste with complete paralysis of the facial indicates that the deep origin of the chorda tympani is not the same as that of the facial.

Dr. CHAS. STEDMAN BULL, of New York, in some remarks on *The Treatment of Scars of the Face involving the Eyelids, directly or indirectly*, discusses some of the common causes of failure in operations upon such cases, and insists upon the importance of preparing the parts by massage, traction, subcutaneous division of adhesions, etc.

A Source of Danger in the Frame of the Eyeglass as commonly manufactured is exposed by Dr. F. B. LORING, of Washington, D. C. Dr. Loring reports two cases, one ending in loss of the eye, in which injury was inflicted by the small spike—which is always placed on the inner side of the handle of the frame as a means of locking the glasses together when closed—being driven into the eye by a blow. He recommends that this catch be removed entirely in those cases where the patients wear their glasses constantly, and that it be placed on the outer side of the frame when used at all. The soundness of this advice is beyond question, and it is to be hoped that this valuable little practical suggestion will not be unheeded.

A Case in which Useful Vision was maintained through a number of years by the aid of a totally dislocated Lens, is reported by Dr. SAMUEL THEOBALD, of Baltimore. The lens, which was quite transparent, was found to be dislocated directly downwards and to be lying some distance below the pupil. By bending his head well forward and turning his face towards the floor, thus bringing the lens into the axis of vision, the patient could read No. 1 of Jaeger's tests (diamond type). His distant vision was brought from $\frac{1.5}{300}$ to $\frac{2.0}{70}$ by a $+\frac{1}{7}$ glass.

The convexity of the lens was found to be quite equal to that of the normal lens in full accommodation—a fact which supports the Helmholtz theory of the mechanism of accommodation, according to which the increase in the convexity of the lens in near vision is accomplished by the action of its elastic capsule, when freed by the ciliary muscle from the restraining influence of the suspensory ligament.

Dr. S. D. RISLEY, of Philadelphia, in a discussion of *The Comparative Value of the Mydriatics*, gives the following conclusions:—

“That the sulphates of atropine, duboisine, and hyoseyamine are efficient agents for paralyzing the accommodative function, and in the treatment of asthenopic eyes. That, in the employment of the last three named, the duration of the treatment is very much shortened. That, for the correction of anomalies of refraction, in otherwise normal eyes, the homatropine is to be preferred. That, if retino-choroidal disturbance is also present, hyoseyamine or duboisine are preferable; to atropine, because of the shorter duration of the treatment; to homatropine, because of their more persistent control over the ciliary muscle. That hyoseyamine is preferable to duboisine, since the tendency to systemic poisoning is not so great.”

Dr. CHARLES J. KIPP, of Newark, New Jersey, reports *Two Cases of Sarcoma of the Choroid, presenting unusual Clinical Features*. Their peculiarity consisted chiefly in the absence of increased intraocular tension, and the fact that there was but very limited detachment of the retina.

Dr. F. BULLER, of Montreal, Canada, reports *A Case of Sudden and Complete Loss of Vision after large doses of Quinine*. The patient was a lady, 34 years of age, previously in good health, and the quinine was given on account of symptoms of septicemia occurring five days after child-birth. Two 20 gr. doses were taken in the first 24 hours, the same on the second day, and three such doses on the third day. On the fourth day the fever and delirium had passed off, but the patient was found to be absolutely blind. There had been tinnitus and some deafness after the first two or three doses, but it had passed off. The pupils were widely dilated and immovable. The ophthalmoscope, at first, revealed no decided change in the fundus, except a bluish-gray haziness of the retinae, most marked at the maculae. Later the optic disks were pale, and the retinal vessels much contracted. As vision returned there was concentric limitation of the field. Central vision was completely restored, but some limitation of the field remained, and the ophthalmoscopic changes were permanent. The author thinks that sudden blindness from cinchonism may be attributed to rapid effusion into the lymph spaces around the optic nerves.

Dr. J. P. WORRELL, of Terre Haute, Indiana, reports *A Case of Marked Narrowing of the Field, with diminished Acuity of Vision, following the use of Duboisia, and presumably a result of the use of that drug*. This condition, which followed the application of duboisia to healthy eyes for the purpose of determining the refraction, lasted for several weeks.

Dr. G. C. HARLAN, of Philadelphia, describes a *Case of Intermittent Concomitant Convergent Strabismus*. The regularity of the intermissions; which were of the tertiary type, continued with the greatest exactness for more than a year, when the squint appeared irregularly, and finally became constant. There was very little hypermetropia, and glasses were without effect.

A *Case of Hemorrhage near the Macula Lutea, from Concussion*, is reported by Dr. D. B. ST. JOHN ROOSA, of New York. The patient was struck on the right lachrymal sac by a bullet, which passed downward, under the skin and muscles, and lodged about a quarter of an inch below the glenoid fossa. Vision was not much affected at the time, but was decidedly impaired a few weeks afterwards. When the patient was seen by Dr. R., V. = $\frac{1}{200}$, with central scotoma. The ophthalmoscope showed a red patch with displaced pigment about it, just below and involving a part of the macula. The eyeball was merely grazed by the bullet, and the author considers that the damage to the retina or choroid, or both, was due to concussion.

Dr. O. F. WADSWORTH, of Boston, discusses the subject of *Optico-ciliary Neurotomy*, and gives the histories of 15 cases in which he has performed the operation. The arguments for and against this operation, for which much was promised at first, but which has lately rather fallen into disrepute, are fairly given, and the author concludes that it offers sufficient advantages to make its employment not only justifiable, but advisable in many cases. He is, however, inclined to limit its applicability within narrower bounds than those proposed by some of its advocates.

Dr. JOHN GREEN, of St. Louis, contributes a paper *On Some Therapeutical Effects of Pilocarpine*. He thinks it useful "in asthenopia of young persons, unconnected with any considerable grade of ametropia, and in which pain or a sense of fatigue is the prominent symptom," and "in cases of impairment of accommodative power, induced by causes transient in their operation, but in which the accommodative disability may continue after the exciting cause has ceased to act." He uses it in connection with a systematic course of reading, instilling one drop of a solution of the muriate (gr. j or ij to $\bar{3}$ j) some hours before the reading is commenced. He thinks it may also be indicated in the earliest stages of strabismus convergens and in certain cases of phlyctenular and vascular affections of the cornea. He considers it more easily manageable than eserine, and less likely to cause painful spasm of the accommodation.

Dr. H. D. NOYES, of New York, exposes the fallacy of *The so-called Cure of Cataract by Electricity*, as illustrated by the history of a reputed case which he had the opportunity of observing. There was an improvement in the general health and a clearing up of haziness of the vitreous, though these results were not attributable to the use of galvanism, and vision became less foggy and more satisfactory to the patient. The opacity of the lenses, however, had increased during the galvanic treatment, and vision, as tested by the types, had diminished.

In another case of cataract, galvanic treatment had resulted in suppurative keratitis with ulceration of the cornea and iritis with adhesions.

Dr. NOYES also reports a case of *Pulsating Exophthalmos*, in which a novel plan of treatment was adopted with success. A projection at the inner and lower angle of the orbit proved to be a distended vein, and this was traced back and tied up at the spheno-maxillary fissure. The

author thinks that the primary lesion was a communication between the carotid artery and cavernous sinus, causing distension of the inferior orbital vein, and that the ligature of this vein resulted in a clot extending to the sinus.

In a case of *Pulsating Tumour of the Orbit*, reported by Dr. HENRY S. SCHELL of Philadelphia, post-mortem examination revealed a gliomatous tumour, nearly filling the left side of the anterior fossa of the cranium, and extending into the orbit through a perforation in its roof. "Although the anterior lobe of the cerebrum on the left side, including the third frontal convolution, was almost disintegrated, the faculty of speech was preserved to the last." The ophthalmoscope had shown well-marked "choked disk" in each eye.

Dr. NOYES describes a *Modification of Snellen's Forceps for Entropion Operations*, and Dr. RISLEY *A New Trial-glass Frame* devised by B. Alexander Randall, of Philadelphia. G. C. H.

ART. XXV.—*A Pocket-Book of Physical Diagnosis for the Student and Physician*. By EDWARD T. BRUEN, M.D., one of the Physicians to the Philadelphia Hospital, and Dispensary of the Children's Hospital; Demonstrator of Clinical Medicine and Lecturer on Pathology of the Urine, in the Univ. of Penna., etc. etc. With wood engravings. 12mo. pp. xv., 250. Philadelphia: Presley Blakiston, 1881.

ALREADY we have several excellent works on physical diagnosis. They do not all bear a similar title; but they teach the same things in somewhat different language, and with more or less full details and differences with respect to the number and value of their illustrations. We have only to mention the names of Da Costa, Flint, Loomis, and Finlayson to prove our statement. There are others equally good which come to us from the continent of Europe, viz., those of Guttman, Barth & Roger, and Lasègue. Still we are prepared to give a hearty welcome to another, which supplies a want, or which by its contents shows care in execution or originality in manufacture. Dr. Bruen's is a small, handy volume, well printed, with a few not very good wood-cuts, presenting some inaccuracies. In his introductory chapter, he gives a fairly clear and good anatomical description of the thoracic organs and abdominal viscera, and shows how much abnormal conditions of the latter may influence the results obtained by physical examination of the chest. We object, however, to expressions like "morbid physiological status" of organs (xv.), and several others that seem to us as being apt to disturb the comprehension of the ordinary student. The work is divided into two parts: the first treating of diseases of the lungs, bronchial tubes, pleura and mediastinum, in fourteen chapters and 158 pages; the second of diseases of the heart and pericardium in 94 pages. The first two chapters are devoted to methods of diagnosis, more particularly to percussion and auscultation. We consider the description of the manner and rules governing the art of percussion well given. The subject is always a difficult one for beginners, and requires to be well handled in order to be properly understood. We are glad that Dr. Bruen refers to Piorry's accustomed remark, "that he

felt the modifications of percussion resonance." It is true, and cannot be too strongly emphasized. Many a time this *feeling* of the resonance of organs has been to us of greater value in determining their size and condition than the sounds conveyed to the ear. Another useful remark at the end of the first chapter, is that quality and pitch are *relative terms*, and each clinical case must always be considered *in itself*, and not as dependent upon other cases.

The author believes, in the chapter on auscultation, that the single-tubed is on the whole more satisfactory than the binaural stethoscope, as used so generally in New York, since its first introduction there by the late Dr. Cammann. A few years since we shared this opinion, but a wider and more frequent use of the binaural stethoscope has now convinced us of its decided superiority as an instrument for accurate physical investigation in regard to chest-sounds. The description of the application of auscultation to the determination of vocal resonance, as well as the exact correlation shown between a given quality and pitch of resonance and similar attributes of respiratory murmur, is very clear. This lucidity is equally commendable in the account of vocal fremitus. In inspection, as is properly remarked, an ideal standard should not be the guide of our interpretation of what we notice, but rather the differences of form or movement as we observe them upon the two sides of the same individual, compared accurately and carefully with each other.

Chapter III., which is devoted to "Principles of Classification," and to "Croupous and Catarrhal Pneumonias," is, after careful reading, unsatisfactory. It offers a vein of originality, it is true, but this is no improvement upon familiar text-books, because it is somewhat obscure and incomplete.

Under the head of "Subacute Chronic Consolidation," the author speaks of the manifestations of syphilis in the lungs, and the uselessness of physical examination to reveal them. This affirmation is strangely in discord with the statements of Fournier.

It is not, however, anything like so difficult to comprehend as the *use of the word phthisis* (p. 58), which is applied to conditions of pulmonary substance brought about by causes such as hypostatic condensation, infarction, and atelectasis. A little further on (p. 61), in speaking of *advancing consolidation*, the author makes the following correct statement: "That in proportion to the amount of consolidation the percussion will be dull, very dull, almost flat, and the pitch will be high; or the dull note will be replaced over more or less extensive areas by a tympanitic or sub-tympanitic note." We cite the two affirmations which precede, and are found in this work not far removed from each other, to justify what might otherwise appear to be a sweeping criticism, viz., that alongside of teaching that is surely not adapted to the student of "essentials" in medicine, we find very sound and healthy doctrine. This atmosphere pervades this work. We understand and appreciate as *good* much that is written; other passages are badly expressed, or contain opinions which we are unable to find recorded elsewhere. They may be true; but, if true, are not yet proven or recognized. As such they ought not to be given in a "pocket-book of physical diagnosis." On page 67 we would cite as an example of personal views the following: "The bronchial and fibroid forms of phthisis are *always* associated with more or less muscular emphysema." It would have been far nearer the truth to write that the fibroid forms of phthisis are quite frequently accompanied by disseminated patches of vesicular

emphysema; the bronchial rarely. On page 73 we cite textually, "Even in practising inspection the value of the blending of clinical observation is recognized. We can by its aid differentiate cancerous tumours, hemorrhagic infarction, aneurisms, acute pneumonias, or paralysis of respiratory movement traceable to some lesion of the central nervous system, from the physical signs of phthisis by inspection." What an olla podrida, and how difficult to appreciate why such different subjects are thus juxtaposed!

In speaking of adventitious cavities in the pulmonary substance (p. 79), the author boldly affirms that "auscultation requires that the cavity shall be at least as large as a walnut." Does he mean to say that this accurate method of investigation requires the patient to be in the third stage of phthisis before it can be rendered available, or does he really consider cavities as large as walnuts only *slight* changes of tissue? The chapter on emphysema is one of the best in the book, and we commend it for its method and general accuracy. According to the author, "it is possible, but extremely unlikely, to hear a metallic note imparted to a large mucous râle developed in the bronchial tubes." We share this opinion with him. The attributes of intra-pulmonary and pleural râles are particularly well defined, and the distinctive differences clearly brought out; and it is reiterated (p. 107) that pulmonary râles may be heard in inspiration and expiration—a fact which many auscultators are prone to forget. Attention is also specially directed to the separation of bronchitis and catarrhal pneumonia in cases in which fine mucous râles are present; here the thermometer has much utility, as the temperature ranges higher in the former disease. In the diagnosis of acute miliary tuberculosis the author omits to refer to the very marked irregularity of the temperature curve, as well as to the great matutinal elevations. He likewise fails to point out how intense is the dyspnoea, and how little this symptom is accounted for at times by the frequency of pulse and respiration, or by the evident physical changes in the lungs. In acute pleurisy it is noticed very properly that one pleural sac may be completely filled, if it occur gradually, *without* occasioning noticeable dyspnoea. No clinical fact is of greater importance at times, and the recognition of it has more than once permitted us to perform thoracentesis, and thus to save lives in most imminent peril. In the bronchial breathing of pleurisy with effusion (p. 135) "the most useful distinguishing feature is the element of distance, or muffled quality of the murmur." Amongst the physical signs of this disease, however, the greatest confidence should be placed in absolute flatness of the percussion note over the level of the fluid. Chapter X., on the lesions of the pleural cavities, is specially good; indeed, if the whole book were similar to this chapter in merit, we should have few criticisms to make. In the differential diagnosis of pneumothorax with a distended stomach, a somewhat frequent source of error, the author lays stress on the fact "if some water be sipped, the tinkle following its entrance into the stomach is very audible." Reference is duly made under the head of malignant disease of the mediastinum to the interesting researches of Gueneau de Mussy in regard to the enlargement of the bronchial ganglia in syphilis and struma, and to the confusion which may be occasioned by this condition.

A short chapter (XIV.) is given on respiratory percussion, mostly taken verbatim from Da Costa's learned article in the *Am. Journ. Med. Sci.* for July, 1875. We are arrested by the statement made in the words of the latter distinguished author, "When in a case of phthisis we find that the

dulness on percussion is no longer modified by fixed inspiration, we have a certain test of the malady having progressed."

Part II., which is much shorter than Part I., deals with the diseases of the heart and pericardium. The first four chapters of this Part, on the processes which develop cardiac affections, and on the symptoms and diagnosis of valvular diseases, are not specially valuable additions to the book. They present no incorrect statements, but they leave the mind somewhat uncertain as to the united signs which shall enable one to make an exact differential diagnosis. In other words, they lack that particular shade of dogmatism, or rather aphoristic statement, which should be a marked feature, in our opinion, of a hand-book for teaching the principles of any science or art. We might continue the analysis of this work chapter by chapter; space forbids. Moreover, the value of it would scarcely justify such lengthy criticism. We took hold of it, pleased with its appearance, and determined to read it through very carefully, as the latest addition to this department of medical literature. It differs from what we have hitherto read in plan and execution. It is no plagiarism, or even a compilation. It usually speaks well for its author, but in some places it is marred by obscure and ill-advised statements. Intermingled with these there is fortunately much that is good, well expressed, and reliable. But the faults are not small ones, and we, therefore, much as we regret to write it, hesitate to recommend it to students. Advanced practitioners may study its contents, and cull from it a great deal that is useful to know and apply, but they should be on their guard not to accept its doctrines, on all points, with absolute faith. If they are not, they would, in our opinion, form more than one erroneous judgment in physical diagnosis. B. R.

ART. XXVI.—*The International Encyclopædia of Surgery, a Systematic Treatise on the Theory and Practice of Surgery, by Authors of various Nations.* Edited by JOHN ASHURST, Jr., M.D., Professor of Clinical Surgery in the University of Pennsylvania. Illustrated with chromolithographs and wood-cuts. In six volumes. Vol. I. New York: William Wood & Co., 1881.

IN the rapid development which our country has enjoyed in various departments of science and art during the lifetime of the present generation, it is no small satisfaction to be able to claim for American surgery its full share of credit. The natural mechanical tastes of our countrymen, and the practical bent of their character, have enabled this branch of medicine to overcome many defects of early education, and under the improved methods of study and teaching our surgical literature is beginning to take that place in the estimation of the world which is its due. The great activity and enterprise, and the vast numbers of the men of which our profession is composed, have given an enormous impulse to medical literature, now beginning to show fruit of which we have justly a right to be proud. One is led to reflections in this vein in perusing the opening volume of a great international work on surgery, brought out under the patronage and largely with the co-operation of American surgeons.

The question which naturally first presents itself relates to the necessity

of the international element in a work of this kind. Why would it not have been better to follow the customs of England, France, or of Germany, in producing a purely national book? Perhaps it may have occurred to the projectors that American surgeons were not yet quite equal to such a task; but we are more inclined to think that the true spirit of American enterprise impelled them to strike out from the beaten path, and adopt a plan wholly new. The idea of incorporating in a single comprehensive work, which should be made available by translation to several nations, the views of the most prominent men of each country, is certainly original. It has the great advantage of collecting the newest and best work from the various parts of the world, and putting it into an available form for general distribution. Whether the present work succeeds fully in realizing this expectation or not, it will be an experiment of the greatest interest and value to the medical profession, and prove one productive of most beneficial results.

The medical public has already been informed as to the detailed plan of the *Encyclopædia*, as it is called, through the circulars which have been distributed by the publishers. Beginning with the history of surgery and what is called *general surgery*, the editor, with a few exceptions, places next in order the diseases and injuries of certain tissues, and concludes with regional surgery. The term "*general surgery*" seems to us hardly satisfactory, but it has this advantage, that it enables the editor to place under this head as little or as much as he pleases. On the other hand, the somewhat capricious intermingling of such constitutional affections as syphilis, scurvy, hydrophobia, with articles on operative surgery, wounds, and amputations, leaves a sense of confusion in the mind as to the bearing which these subjects have upon one another, and their appropriate place in a scientifically arranged pathology.

We notice a few unimportant departures from the proposed scheme in the volume now before us, if we except what was to have been the opening article: we should have been glad to see the "*Nestor of American surgery*" in his appropriate place on this occasion. The international character of the work is not fully sustained in the present volume, there being but four foreign authors out of seventeen. We find in the prospectus many well-known names, such as Verneuil, Bryant, Stricker, Bellamy, Watson, Adams, McCleod, Allingham, Duplay, and Volkmann. England appears certainly to be well represented, but we should have been glad to see a larger representation from France, and we regret that the editor has not availed himself more freely of the large number of pathologists which Germany could have furnished, and whose services such a work as this could hardly afford to do without.

The book opens with an article on disturbances of nutrition and the pathology of inflammation, by Dr. S. Stricker, the well-known author of the text-book on histology, and Professor of Experimental and General Pathology in the University of Vienna. Not only do his views represent a pathology well in advance of that to which the readers of this class of books have been accustomed, but we get here from the fountain-head a great deal of original work from one of the most eminent pathologists of the day. The anatomy of the capillaries, sketched at the beginning of this article, and the analogy between their contractility and the action of glands, are points which indicate the high character of the work. The study of the vaso-motor system of nerves has made great advances during the past fifteen years, and every year our knowledge of this complex

physiological problem is still further increased; and now the pathologist makes bold to say: "I would soon advance the opinion that no physiologist, no pathologist, no therapist, can follow his profession in a precise manner, without being familiar with this field of inquiry." Professor Stricker certainly does his best to make the subject clear to his readers. We shall resist the temptation to summarize his able exposition. Space would hardly permit more than calling attention to the prominence which he gives to that group of the vaso-motor nerves which do not restrict but actively cause the vessels to dilate; to the function of the bloodvessels of the abdominal viscera as the principal regulators of the blood pressure ("an animal with complete paralysis of the vaso-motor nerves of the abdominal viscera therefore bleeds to death, as it were, into its own abdominal vessels"); to his own experiments demonstrating the existence of the dilator nerves in the posterior sensory roots which enter the sciatic; or to his arguments, by which he shows that the hyperæmia of inflammation is caused by direct local irritation of the dilators, and not by a paralysis of the constrictors, thus giving by far a more simple explanation of certain of the cardinal symptoms of inflammation than has hitherto been offered. The traditional mode of characterizing the process by these symptoms is discarded by the author, who contents himself with giving two main characteristics, namely: an active hyperæmia and an active tissue metamorphosis. We may not always have swelling or pain, and it is doubtful whether there is an actual production of heat, the elevation of temperature being due to the accelerated blood current.

To understand fully the attitude of Stricker towards the question of inflammatory changes in the tissues it is necessary to have been familiar with the standpoint of cell pathology as it existed at the time of Cohnheim's exposition of his theory of the migration of the white corpuscles of the blood. The work of many eminent young pathologists of that day was steadily leading in this direction. Recklinghausen had observed in Würzburg the amœboid movements of certain cells during the inflammatory process, while Stricker at Vienna, although he had noticed the occasional passage of red corpuscles through the walls of vessels, was seeking in the changes observed in connective-tissue cells for an explanation of the origin of the small round cells of the inflamed tissue. Cohnheim sought to overthrow Virchow's theory of cell proliferation, but Stricker, although he now confesses his views were at that time in a very rudimentary state, still stoutly resisted the new doctrine, and has continued to do so since, each new observation having served to complete and elaborate what he now characterizes as the doctrine of tissue metamorphosis. It is not a matter of surprise that there should be a tinge of strong partisan colouring in an article prepared by the chief of one of the contending factions. But making all due allowances, we must nevertheless confess that Professor Stricker seems to have exceeded his privileges in taking advantage of this opportunity to prepare what might be considered a treatise on general histology and the structure of cells, rather than an exposition of the various pathological problems of inflammation. The views of Cohnheim, which have been so prominent a feature of pathological writings during the past fifteen years, are thus disposed of, doubtless to the surprise of many readers: "The migration theory has proved to be fruitless. It has made no progress since 1867, and in regard to the doctrine of inflammation it cannot make any progress; for it denies the active processes. But the doctrine of tissue metamorphosis has made constant advances, and every new step which I have

taken in the course of the last decade has proved to be an argument against the migration theory." It would seem at least appropriate that some account of this process should be given, and that an explanation of Cohnheim's erroneous views, if such they be, should be attempted. The battleground on which this question has been mainly fought out is the cornea, the transparent structure of which has made it peculiarly favourable for histological study. Considerable space is given by Stricker to the study of this tissue and its behaviour in inflammation. Without undertaking to rehearse the various explanations which have been given of the striking pictures obtained by different reagents, we may briefly say that our author has come to the conclusion, as the result of prolonged observation, that the stellate cells, known as corneal corpuscles, are not to be regarded as permanently distinct structures, but that the adjacent basis substance in which they lie cannot always be separated from them. "One and the same strip of territory is at one period a portion of the body of a cell, or of a process; at another period a part of the basis substance." The basis substance is, like the cell, living matter, and, under the stimulus of inflammation, it, like them, may be converted into amœboid cells, or, as he would prefer to say, into *amœboid substance*. "It is accordingly the tissue itself which is transformed into pus corpuscles." In his view the branched cells of the cornea can no longer be regarded as fixed cells; indeed, he is not prepared to say that in the normal tissue in the fresh state they exist at all! What is true of the cornea he undertakes to prove at length by analogy to be true also of all other connective substances, bone, cartilage, etc. The fibrillar changes which take place in the various tissues also occupy a large portion of the article. A few general closing remarks dispose of the epithelium and endothelium, the process of healing and repair.

The other aspects of inflammation, including also some of the ground occupied by Stricker, are treated in an article entitled "Inflammation," by Dr. William H. Van Buren. We confess to a little surprise at seeing the name of this able teacher in a field so widely different from those with which we are accustomed to associate it. It would have seemed, perhaps, more appropriate to entrust such a department to the hands of some coming Paget or Sanderson. We must acknowledge, however, that there are very few writers besides the author in question who could have prepared an article requiring such a diversity of knowledge and experience of so high a grade. That portion which is devoted to the causes of inflammation is, perhaps, the best in the chapter, and possesses a special value in giving a most complete summary of the work which has been performed by Pasteur, Koch, and others in the study of the relations of organisms to disease. The studies of Koch, translated by the Sydenham Society, and the work of the International Congress have begun to shed light on this obscure domain of pathology. The work has been taken from the hands of the pseudo-pathologists and romancers, and has been put upon a basis which deserves the careful attention of every intelligent physician. It now appears that there is not only an organism which is peculiar to anthrax and another to chicken cholera, but one also which produces septicæmia in mice and one which produces gangrene in the same animal. In rabbits similar diseases are caused by the presence of certain well established forms of microbia. The connection of spirilla with relapsing fever in man is generally received. It is true that the facts already obtained are few in number, isolated from one another, and of

extremely limited application, but they are nevertheless of the greatest interest as showing that science has finally got within its grip an extremely rebellious subject, and that we have a right to hope for a revolution in our ideas of the etiology of a most important class of diseases, which may be productive of incalculable benefit to human beings. It will be a part of the curious history of our times that when the scientific world was on the eve of such important discoveries, its leaders were obstructed in every possible way in their work by the zeal of indiscreet reformers.

The anatomical part of the subject is perhaps the least interesting in the article, and we turn with pleasure to the final sections on treatment, where our author writes as one having authority. There is to be found a calm, judicial review of modern methods and ancient as well, many of the latter receiving finally an official death-blow. The following sentence is an illustration: "Meanwhile antiseptics are gradually taking the place of antiphlogistics; the latter cease to be thought of in proportion as the former grow in the confidence of the profession; and the opinion is, on the whole, steadily gaining ground, that antiseptics constitute the best preventive measures against unhealthy inflammation." Again, "It is a common practice to cover an inflamed surface with mercurial ointment before applying a poultice. This is based on the wide-spread belief, founded upon its singular efficiency in syphilitic inflammations, that the drug has a certain power in mitigating the intensity of the inflammatory act, and in rendering exudations more readily absorbable. There is no positive evidence that mercury possesses this power except in syphilis." In regard to the anti-inflammatory virtues of aconite, digitalis, veratrum viride, and perhaps we need hardly add tartar emetic, Dr. Van Buren is equally sceptical.

One turns with considerable interest to the article on septic fevers. This is written by Dr. Delafield, of New York, and is entitled *Pyæmia and Allied Conditions*. Although it consists of but nine pages, it is adorned with no less than two large coloured lithographic plates, which, as they show pathological appearances (metastatic abscesses) familiar to most students, are, we presume, intended to do a sort of chromo work for the whole volume. Dr. Delafield is evidently at home, both in the literature and the pathology of the subject; and what he has to say will be of special interest to every student in this department of pathology; but the confusion which still remains in the minds of English readers in regard to the classification of the different varieties of surgical fevers, and their relations to the healing of wounds, renders it particularly desirable that an attempt should be made to give to each a more defined position. The general impression left by this article is that, clinically as well as pathologically, there is but one disease of protean aspect and of uncertain origin. This is hardly a fair statement of the case, and is a position which tends to throw the question back into the chaos from which modern science had, to a certain extent, succeeded in resewing it. It is true that the names septicæmia and pyæmia now no longer express what was originally meant by them, but this is no ground for placing the entire group under the latter heading. There is no attempt to bring out the fact that a form of malignant fever may be developed when no suppuration exists, and that during that process we have an equally malignant variety accompanied by clinical symptoms and pathological changes, which present sufficiently destructive peculiarities to authorize its recognition as a separate disease. Undoubtedly we

find cases in which the two forms seem to blend, or in which the symptoms are not sufficiently characteristic to enable us always to make a positive diagnosis during life, yet more than one of the cases cited to emphasize this uncertainty could, we think, have a different interpretation from that for which they are designed.

For the practical surgeon it is important to recognize the special conditions under which these forms are likely to develop; this is not clearly set forth, and there is much that is confusing in his method of treating this part of the subject. It is not definitely stated, for instance, what symptoms almost invariably accompany that form in which we find metastatic abscesses, or under what circumstances or stage of the healing process these are likely to occur. The statement of the treatment of these fevers is equally unhappy, and betrays a lack of clinical experience. The view that "treatment is of no avail" would hardly be received by the majority of surgeons, and we feel sure that Mr. Lister would object strongly to the statement that he had "devised a system of dressing based on the use of carbolic acid." We are encouraged to indulge in a critical vein, as we find that the editor has felt called upon to add to and comment upon some of the author's work.

Not among the least interesting features of this volume is an article by Verneuil on the reciprocal effects of constitutional conditions and injuries. The nature of the soil in which the surgeon works is often overlooked in estimating the advantages of a special method, or a favourite operation. The tendency of the surgical mind is to become impatient of the somewhat plodding ways of his medical colleague, of preliminary examinations for supposed disease, none of the external manifestations of which may show themselves, and when we read of the baneful effects of arthritism, scrofula, hepatism, nephritism, eardism, syphilis, and the long list of affections cited by the author upon wounds and operations, we shudder to think of the livers, the kidneys, and lymphatic systems which have quietly succumbed beneath the knife of many a "fine operator." It has been said, and perhaps well said, that to kill a man is a hard thing to do, and one is often surprised to see how many a frail creature or physical "dead beat" will survive the most appalling surgical experiences. On the other hand, we have perhaps yet to learn whether a more careful consideration of constitutional conditions may not prove a more important factor in surgical statistics than improvements in methods of operating or treating wounds. The principal affections which our author discusses are arthritism, cancer, scrofula, tuberculosis, senrivy, syphilis, malaria, alcoholism, diseases of special organs, pregnancy, and old age. The relations of these diseases to surgery appear to have been an object of special study by him, and although he has felt himself called upon to present only the dark side of the subject, we commend his teachings to the thoughtful perusal of the practical surgeon.

Dr. Alfred Stillé's article on Erysipelas is perhaps the most scholarly in the book, and from a literary point of view is an excellent model of the style suited to such a work. The author very properly does not commit himself definitely as to the causes of erysipelas. He is, however, an earnest believer in a specific contagium, which may enter the system either by a lesion of the integument, or through the mucous membranes, although he would assign to certain external conditions an influence in the production of the disease. The effects of heat and cold, of damp weather, draughts of air, and the east wind cannot be wholly ignored by any sur-

geon of experience. On the other hand, the experiments of Koch, as we have already seen, have given some definite results, which, although extremely limited, must, we think, be given an important place in the study of the etiology of erysipelas. Our experience of this disease inclines us to the opinion of those who believe feebly in idiopathic forms of the disease, and we are inclined to seek some abrasion or lesion as the point of entrance of the poison.

The article on hydrophobia, by Dr. W. S. Forbes, is not so satisfactory as we have a right to expect after the experience gained during the past few years. The physiological pathology is a point which was ably exposed in a very valuable article by the late Dr. T. B. Curtis, which the author appears to have overlooked.

Mr. Butlin, of St. Bartholomew's Hospital, contributes a surgical study of scrofula and tubercle. His pathology is modern, and his experience sufficiently extensive to make a very interesting article. We are somewhat surprised that the article on Rachitis has not been given to a London surgeon, in view of the great prevalence of the disease in that city, but we are not disposed to complain of a subject confided to the care of so able a writer as Dr. J. Lewis Smith.

The article on Scurvy has been appropriately written by Dr. Philip S. Wales, the Surgeon-General of the U. S. Navy, and we should class it with Dr. Stillé's article in point of literary quality. Dr. Agnew is not, perhaps, at his best on such a subject as the General Principles of Surgical Diagnosis. This, and the article on Operative Surgery in General, by Dr. J. H. Brinton, seem to us attempts to cover ground which hardly comes within the scope of such a work as this. Most of what is written belongs to the clinic or lecture room, or may be easily interpolated in other articles, and in fact a good deal of what is said can be found elsewhere. We can, however, be sure that the authors have made the most of their subjects. Dr. Henry M. Lyman's "Anæsthetics and Anæsthesia" is a very valuable contribution to that subject. The historical portion leaves little to be desired in the clearness and fairness of the statement. The phenomena, the physiology, and the accidents of anæsthesia all receive careful attention, and the chapter closes with a very imposing description of the properties of anæsthetic substances. An article on Minor Surgery, by Dr. Charles T. Hunter, and an article on Plastic Surgery, by Dr. Christopher Johnson, Emeritus Professor of Surgery in the University of Maryland, both of which are very practical and amply illustrated, also appear.

The volume closes with an exceedingly interesting and valuable article on amputation, by the editor, Dr. Ashhurst. The history of amputation displays to advantage the author's erudition, and is illustrated with woodcuts, showing many curious methods and appliances. It is preceded by a brief defence of the operation so often designated as the *opprobrium* of the art, in which he espouses a phrase of older writers, who dubbed it "*the humane operation*." Under the leading conditions calling for amputation, we notice as of special interest cases of laceration caused by wild animals, several of which are reported. The rule given that no amputation should be undertaken until after the complete establishment of the line of separation hardly coincides with the views of a distinguished surgical authority of Philadelphia, who lays down the rule, if we remember rightly, that in idiopathic gangrene one should wait for the line of demarcation to form; but in traumatic gangrene one should operate immediately. Yet, in some cases, as in the "traumatic or spreading gangrene," our author does recom-

mend amputation at a point sufficiently removed from the disease. We think a better rule would formulate itself somewhat thus: if the gangrene remains a local affection, the surgeon should await the formation of a line of demarcation; but if it shows a tendency to spread rapidly, amputation at a sound point should be resorted to, or free incisions should be made in the dead tissue to give the poisonous fluids and gases an opportunity to escape. For it is to the latter agents that the transmission of the mortification from injury to adjacent sound parts is chiefly due. We notice that pyæmia is not mentioned as a condition calling in certain cases for amputation, although wounds from poisonous bites have a place upon the list; in many continental cities the operation is performed for the purpose of removing the source of pyæmic poisoning, and is held in estimation by many surgeons. The instruments given are well chosen, although we should hardly feel satisfied with the cross-spring catch or slide-forceps delineated. The long, narrow, straight armed toothed forceps, without catch or combination of any kind, have always seemed to us a much more "surgical" instrument. Dr. Ashhurst is evidently a conservative in his methods of treating wounds, and also very methodical, for we find that he always uses twisted metallic sutures, and is in the habit at the first renewal of a dressing after an amputation of trying every suture in succession, and untwisting it a little if it seems to be applied too closely. We would not have it supposed that we intend to deery the amount of time and personal attention of the surgeon which this implies. It is, doubtless, habits like these which enable him to obtain such excellent results without resort to "antiseptic dressings," and to maintain the primitive simplicity of that school of which the good Samaritan was a disciple. Although Dr. Ashhurst does not count himself among the followers of Lister, we think an acknowledgment is due, in such an article as this, to the work which this great surgeon has accomplished. That the so-called antiseptic dressing is not a panacea for all the ills which wounds are heir to would hardly be maintained by its most ardent supporter, and we think its author even would allow that it is not the only method by which they may be averted. But we venture the surmise that were our good friend of the Scriptures to fall among the *personnel* of the average hospital staff, he would eagerly avail himself of a few of the modern safeguards against human carelessness. The remarks on the mortality of this operation are extremely interesting, and contain a number of valuable tables, counting amongst them a list of 100 consecutive cases occurring in the author's practice. Among the latter are three amputations at the hip. The number of deaths in Dr. Ashhurst's cases was but 28. Analyses of statistics are given to show the influences of age, sex, the period of the operation, and so forth upon the results. They are features of interest, not only on account of the useful information which they convey, but also as specimens of intelligent and thorough work. There are also tabulated by Dr. F. C. Sheppard 633 cases of hip-joint amputation. Of special amputations, those about the ankle and knee present the greatest interest, for it is in these regions that surgical ingenuity has had the most favourable opportunity to develop itself. The various methods employed at the knee-joint are conscientiously enumerated, leaving, perhaps, too much doubt in the mind of the reader which of them has best stood the test of experience. On the other hand, we do not find mentioned one of the most important of the amputations at the ankle-joint, that described by Soppart, and to our minds giving decidedly the best stump. Tripier's modification of Chopart's method is

barely mentioned, and the principle by which the disadvantages of the latter operation are overcome is not alluded to. It has been generally supposed that the malposition of the stump, producing a tendency to ulceration, was caused by the action of the muscle pulling on the tendo Achillis. It is now recognized to be due to the obliquity of the os calcis, the lower surface of which is made horizontal by a cut through the bone.

We are disappointed in the illustrations accompanying this volume: although we are spared the time-honoured transmittenda which publishers are wont to cling to with an almost paternal affection, those which take their place have a certain pre-Raphaelite flavour which does not reflect credit upon the progress made in this department of art. Considering the vast amount of money annually spent by the profession in this country in medical literature, for we believe there is no better market in the world, we think it has the right to demand the highest grade of excellence in all departments of the publisher's art. We are disposed also to criticize gently the size of the volume, which renders the perusal of an article in one's easy chair, with the evening cigar, a task requiring the exertion of no small amount of muscular force. The large and handsome type, however, makes reading easy to old eyes, and the volume presents the elegant and dignified appearance which a work of such great importance to surgery should possess.

J. C. W.

ART. XXVII.—*A Treatise on Diseases of the Eye.* By H. D. NOYES, A.M., M.D., Professor of Ophthalmology and Otology in Bellevue Hospital Medical College; Surgeon to the New York Eye and Ear Infirmary; President of the American Ophthalmological Society, etc. 8vo. pp. 360. New York: Wm. Wood & Co., 1891.

THIS work, which is one of the Wood series, is something more than a hand-book. Though it is condensed into a comparatively small compass, its author not only gives us the results of his own extensive experience, but has carefully searched the modern records of the literature of his subject, and presents an excellent epitome of the ophthalmic surgery of to-day. Brief statements are given of the anatomical structure of the different parts of the organ, and the discussion of important points in physiology and pathology is sufficiently full for all practical ends. The subjects of paralysis of the external muscles of the eye and of the various forms of optic neuritis and atrophy, so interesting and important in their connection with general medicine, are ably and quite freely discussed.

Though the author has, of course, some views of his own, there are none that can be called "whims;" the directions for treatment are practical and sound, and represent fairly the practice of ophthalmic surgeons in America. There are very few exceptions to this rule; we think, for example, that the majority of ophthalmic surgeons commence with a weaker glass than $\frac{1}{8}$ or $\frac{1}{6}$ in presbyopia, and that $\frac{1}{2}$ or $\frac{1}{6}$ is more frequently the first prescription. A $\frac{1}{4}$ can rarely be continuously used with entire comfort in the commencement of simple presbyopia; and a glass stronger than is necessary to give sharp definition at the accustomed reading distance is thought by some good authorities, not only to render the wearer unnecessarily dependent on its aid, but to actually hasten the loss

of the remaining accommodative power. Iodide of potash is entirely omitted from the list of remedies in parenchymatous keratitis, perhaps inadvertently, as it is very generally used in this disease, which, in a large proportion of cases, is a form of tertiary syphilis, and is more influenced by the iodide than by any other medicine. Inunction, which is the only form in which the use of mercury is recommended, would be found worse than monotonous in the long, weary months of treatment that this disease demands.

Not much is to be said of paper and print, except that they are in accordance with the price of the book, the subject-matter of which deserves to be presented in a more elegant form, and to command a higher price. Though the cuts generally answer the purpose of illustration fairly well, they are far from being good specimens of high art; the coloured plates of the fundus are probably much the worst that have ever appeared in public, and none of the four portraits of the author do him justice. In spite of these drawbacks, Dr. Noyes is to be congratulated upon having produced a really good book, which will take rank at once among the best text-books on the subject in our language. The general practitioner can depend upon it for all that his practical needs require, and the specialist will often find it a convenient reference.

It is to be regretted that many who will want the book cannot obtain it without paying for eleven other books that they do not want.

G. C. H.

ART. XXVIII.—*On the Rapid Method of Cure of External Aneurism by means of the Elastic Bandage. With a table of Seventy-two Cases.* By A. PEARCE GOULD, M.S., F.R.C.S., Lecturer on Anatomy at the Westminster Hospital Medical School, Assistant Surgeon to Westminster Hospital, Surgeon to the Northwest London Hospital. 8vo. pp. 52. London: J. W. Kolkmann, 1882.

THE dangers attendant upon diseases of the arteries have always been recognized by the medical profession. Much attention has been devoted to the subject, and the methods of treatment to be adopted in cases of aneurismal dilatation of the vessels have been many and varied. When the application of a ligature in the continuity of the vessel was suggested and practised, it marked one of the most decided steps taken in advance in the whole domain of surgery. Great as have been the successes attendant upon that operation, many as have been the lives saved by it, yet the dangers attending its performance have always been considerable, and have led to many attempts to substitute some other method of procedure.

When Esmarch introduced the elastic bandage to the profession as a means of controlling hemorrhage, its proven efficiency very naturally led to its being thought of as a suitable agency for the treatment of those external aneurisms to which it could be applied. The anticipations formed of its efficiency have not as yet been fully realized, and to examine into the cases recorded, to study the causes of failure in some, while others were brilliantly successful, is the task which Mr. Gould undertook in a paper read in the Surgical Section at the International Medical Congress held in

London last summer, and which he has further extended in the present pamphlet.

The importance of the subject is a sufficient apology for speaking of Mr. Gould's work at some length. The first chapter is occupied with an account of the rapid method of cure by digital compression, introduced by Murray in 1864, and of the case in which Dr. Walter Reid first and successfully applied the elastic bandage. The details of this case are important, as showing that Dr. Reid appreciated the principles upon which the successful application of his method must depend, and from which it would appear that but little variation can be safely or judiciously made.

In a case of popliteal aneurism Dr. Reid applied an elastic bandage from the toes to the junction of the middle and lower thirds of the thigh, taking care that it was quite loose immediately over the aneurism itself. The elastic tubing was then wound round the thigh just above the bandage, and the latter removed. After fifty minutes, the pain at the seat of constriction being severe, a Carte's compressor was adjusted to the main trunk at the pelvic brim, and the tubing removed. This compressor was then kept lightly and intermittently applied till the next evening. The patient was cured of the aneurism, but died of bronchitis, etc., nine months afterwards. The rationale of this treatment is simple. The circulation in the limb was totally arrested, with the aneurism full of stagnant blood. Rapid coagulation ensued, and the application of the compressor so modified the direct arterial flow as to prevent it breaking up and washing away the freshly formed coagulum, while the establishment of the general circulation in the limb by anastomosis was not interfered with after the removal of the tubing.

The second chapter is devoted to a study of the pathology, or history of the formation of blood clot. It is well shown that, while most of the methods of treatment adopted aim at the gradual obliteration of the aneurismal sac by the deposition of layers of fibrine, in some, and in the one now under consideration, the object is to obtain the immediate formation of a blood-clot, containing corpuscles as well as fibrine, filling the whole cavity of the aneurism. This is unquestionably the end aimed at by Dr. Murray in the method of digital compression introduced by him, but it is quite certain that in very many cases where it is practised, the successful result following long-continued compression is owing to the deposit of successive layers of fibrine within the sac. So when a ligature is applied, the collateral circulation is speedily established, and a recurrent blood stream soon flows into the aneurismal sac, or at least impinges upon the fresh coagulum which has formed in it, but as it is comparatively slow and feeble, with the result that continued deposition of fibrine takes place. This at least is the favourable issue. But often the returning current is sufficiently strong to wash away the clot already formed. In this lies the explanation of many failures of digital compression. A feeble stream is allowed to flow into the sac gradually disintegrating the clot first formed. Whether the compression exerted completely arrests the circulation, or does so gradually and partially, in either case no attempt is made to control the collateral circulation.

In Reid's method the plan is totally different. The first effect of the elastic bandage applied to the foot is to completely empty the capillaries, as well as the larger vessels, and to form a dam beyond which the circulation from above cannot pass. The effect of this is to distend the sac and the artery with stagnant blood. Then the bandage passing lightly over

the tumour, so as not to express its contents, is again applied firmly above, and if necessary supplemented by the use of the tube, to the complete stoppage of the circulation in the whole limb. It is left in this condition for about one hour, by the end of which time the blood within the aneurism has, in all probability, coagulated *en masse*. Then compression being applied to the artery above the tumour, and the direct circulation being more or less perfectly controlled, the bandage is removed, and the anastomotic circulation allowed to establish itself. The continued compression upon the main trunk meantime diminishes the current, or entirely prevents the blood passing into the aneurism with force sufficient to wash away, or break up the clot. In favourable cases that part of the clot contained in the artery undergoes organization, while that in the sac is partly absorbed, and partly remains as disintegrated material.

It will be seen that in Reid's method the important point is to obtain complete stasis of the blood, and various modifications have been made with the object of securing this advantage without some of the disadvantages attached to the proceeding. Thus where the sac has been thin, and the surgeon feared its too great distension if the elastic covered the whole extremity, the bandage has been applied merely just below the aneurism, while compression was made upon the main trunk to prevent the systolic impulse disturbing the integrity of the clot.

Mr. Gould does not think that we can decide why coagulation takes place, but that it always does so in a distended aneurism is proven by experience, and the results shown in his table of cases.

As has been before said, the destiny of the clot in the trunk of the artery, and of that remaining in the aneurismal sac, is very different. In the latter it undergoes more or less perfect absorption, and the sac contracts upon it, but in the former it becomes organized, and secures permanent closure of the vessel.

Mr. Gould says, "The permanent cure of the aneurism is brought about by organization of the thrombus in the artery rather than by any change in the aneurism itself, the clot in the aneurism being of use mainly as a means of securing a thrombus in the artery," and "the process of cure by this treatment depends, then, first, upon clotting of the blood, which commences in the aneurism, and spreads into the artery; and, secondly, upon the organization of the clot in the artery."

The causes of failure in this operation are two: either the blood does not coagulate, or the coagulum in the artery does not organize. Mr. Gould proceeds to an examination of the reasons for these failures, and the result is, that, while in some cases the failure may depend upon an aplastic state of the blood, in the very great majority it originates in allowing the blood-current from above to impinge with too great force upon the newly-formed coagulum, which must undergo shrinking by the loss of serum involved, and be thereby loosened in some of its attachments.

Chapter IV. is occupied with a consideration of the objections which have been urged against this method. While Mr. Gould recognizes the fact that the application of Esmarch's bandage sometimes increases the blood tension, he thinks that it does not always do so, and is of the opinion that, while a careful examination should always be made of the arterial system beforehand, there is not sufficient force in the objection to interdict its use. The same precautionary measure of an examination of the circulation is regarded by Mr. Gould as a sufficient protection from the risk that fatal syncope may follow the removal of the bandage. The continued compression

exerted upon the main trunk for the protection of the newly-formed clot should at the same time prevent a dangerous flow of blood into the capillaries, dilated as they are from vaso-motor paralysis. But, as a matter of course, any measure is dangerous, when a feeble circulation, depending upon diseased conditions, exists. Case No. 30 in the table, that of Dr. Weir, would appear to have been a case in point. A tendency to cause gangrene has been urged as an objection against the elastic bandage. Two cases appear in the table, but Mr. Gould thinks that an examination into their details does not warrant the conclusion that the form of operation was accountable for the ill result. That ecchymoses are apt to form over the tumour has been noticed by several observers, but here, also, Mr. Gould is satisfied that protection of the skin, by moderately firm pressure, will avert the evil.

Mr. Bryant has suggested that there may be a risk of this mode of treatment setting up albuminuria, but Mr. Gould, after examining the reasons given for this fear, thinks that it will be found to be groundless, and that the observed facts do not warrant it, inasmuch as the increased blood tension is of very short duration. Mr. Gould does not think, either, that there need be any fear of using ether in these cases, preferring it to morphia, which is less effectual in controlling the severe pain attendant upon the procedure. Mr. Gould's table shows no case in which injury of the nerves was produced by the bandage, while, in but one case, has its use resulted in rupture of the aneurismal sac. The objection that the proportion of failures has been large where this method has been resorted to, is well shown to lie with equal force against other methods of compression, and Mr. Gould thinks that many of the failures can be distinctly traced to a want of appreciation of the rationale involved, and a neglect in carrying out some of the details.

It will be evident to any one reading this chapter that Mr. Gould occupies the position of a special pleader rather than of an impartial judge, yet we would not be understood as implying that he has not fairly met the objections urged against the use of the elastic bandage. But, as he is an earnest advocate for the method, he has very naturally shown a disposition to look leniently upon the grave charges brought against it.

In Chapter V. Mr. Gould subjects the seventy-two cases he has tabulated to a careful analysis upon the following points: 1. Age of patients. 2. Constitutional disease. 3. Character of aneurism. 4. Seat of aneurism. 5. Effect of preliminary treatment. 6. The frequency, duration, and exact mode of application of the elastic compression. 7. The duration and kind of subsequent treatment. 8. The subsequent history of the cases in which this treatment failed. 9. The influence of anesthetics.

Through the details of this analysis, thorough and valuable as it is, we cannot follow Mr. Gould. It will be sufficient to give briefly some of the conclusions at which his study of the subject has enabled him to arrive.

First, the method introduced by Dr. Reid is worthy of further and more extended trial. It has had a large measure of success, is easily applied, and its success or failure, in a given case, is so speedily and easily recognized, that it is well suited for properly selected cases. Its dangers and disadvantages have been much exaggerated, and a judicious selection of cases, with a careful attention to the details of the treatment, will, in great measure, obviate them. Second, in selecting cases to be subjected to this method of treatment, it is of great importance that the vascular system should be otherwise healthy. When practicable, preliminary treatment,

with the object of increasing the coagulability of the blood, should be instituted; to this end a dry albuminous diet, and large doses of iodide of potassium seem to be most conducive. While complete stasis of blood in the aneurism and adjacent artery is essential, it is of much importance that the bandage shall be so applied as to disturb the general circulation as little as possible. On this account, Mr. Gould advises that the blood should not be expressed from the whole limb, as originally proposed by Dr. Reid, but only from that part of it immediately below the aneurism. The stasis thus obtained should be maintained for an hour and a half. Afterwards, and whether a clot has formed or not, the bandage should be removed, and the main artery compressed for from six to twelve hours, either by the finger or by a tourniquet. When the aneurism is large, and growing rapidly, the bandage should be carried lightly over the tumour. Should failure ensue, the prospect of success following other methods of treatment is not impaired by the trial.

On every page of this pamphlet there is manifest evidence of the painstaking care Mr. Gould has bestowed upon his study of the subject. He is entitled to much praise for the thoroughness with which he has done his work, for it is by such labour that a true estimate of any new surgical procedure can alone be arrived at. In this instance Mr. Gould has done much to place the operation, for which, as we have before said, he is an earnest advocate, upon a firm basis. The number of cases submitted to his study is tolerably large. When that number is increased, as it will be, we shall know whether Mr. Gould's fairly deduced conclusions are sustained.

S. A.

ART. XXIX.—*Manual of Diseases of the Skin, with an Analysis of Eight Thousand Consecutive Cases and a Formulary.* By L. DUNCAN BULKLEY, A.M., M.D., etc. Duod. pp. 312. New York: G. P. Putnam's Sons, 1882.

IN this little book the attempt has been made to present the subject of diseases of the skin concisely, and yet with sufficient detail to be of practical value to the student and practitioner. Pathology is introduced but briefly, and no attempt has been made to enter the literature of the subject, or to present or discuss doubtful questions. Differential diagnosis has not been fully entered upon for want of space, and here we think the author has made a mistake, for this is so important a matter, that it will not do to pass it over by merely mentioning in connection with each eruption those with which it may be confounded. Diagnosis is so clearly the groundwork of the most elementary knowledge of diseases of the skin, that we think Dr. Bulkley would have done better to omit some things which he has put into his little manual (*e. g.*, the chapter giving an analysis of eight thousand cases) in order to give a little more fulness to the sections on diagnosis.

After giving short chapters on the study of dermatology, the anatomy and physiology of the skin, nomenclature and classification, relative frequency of diseases of the skin, diagnosis and etiology, Dr. Bulkley goes on to describe the various distinct affections in detail, and concludes with

chapters on diet and hygiene of diseases of the skin, and therapeutics of diseases of the skin.

The classification employed by Dr. Bulkley is essentially that of the American Dermatological Association, now the acknowledged standard in this country, and very like Hebra's classification, which is employed in Germany, and which is winning its way also in France and England. It is indeed a happy day which appears to be dawning in the dermatology of the present, when all the chief teachers of this branch of medicine unite in employing the same classification, and to a very considerable degree a similar nomenclature. This plan, as followed in Dr. Bulkley's book, will enable the student who has made use of it during his studies and in connection with his class instruction, to pass without confusion from it to Duhring when he desires to push his studies further. We regret, however, to observe here and there the use of obsolete and confusing terms, as "syphilitic psoriasis." It would be well if this lumber were once for all put away out of sight.

The discussion of the various affections is brief and terse, but clear, the fault, if any is to be found, lying in the too frequent introduction of synonyms and unnecessarily minute subdivisions, a course which loads the text with those quantities of new names so discouraging to the beginner. The treatment in each case is indicated in a general way in the text, and reference is made by number to the appropriate formulæ to be found at the end of the book.

On the whole, this little work is the best of its kind thus far presented to the profession, and is in all respects far superior to the manuals sent over by our English brethren, upon which we have heretofore been obliged to depend.

A. V. H.

ART. XXX.—*A Treatise on the Diseases of the Nervous System.* By JAMES ROSS, M.D., M.R.C.P. London, etc. In two volumes. Vol. I. pp. 594, and Vol. II. pp. 998. New York: William Wood & Co., 1881.

THIS is a very ambitious attempt to give an account of the anatomy, physiology, and diseases of the nervous system. There are, in the two volumes, 1600 pages nearly, 285 cuts, and 6 plates. The anatomical descriptions and the illustrative cuts are, for the most part, taken from Landois, Henle, Kölliker, Charcot, Duret, Ferrier, and other well-known sources. The illustrations are, generally, well done. Although having an American imprint, the printing was, no doubt, executed in England. It seems to us a mistake to have so great a disproportion between the two volumes in size—the second volume being nearly twice the size of the first. The necessity for such an arrangement is not apparent, since the "Special Pathology of the Nervous System" is continued from Volume I. Viewed as a whole, the work must be regarded as a treasury of information collected, as we will see, from convenient sources. Symptoms of an intellectual indigestion are manifested abundantly, and heaviness from repletion is an obvious condition of the work. The author seems to us to have laboured over his task, to have carried it along as a grievous burden, and to have been borne down almost by the mass of materials.

In the preface we find the author saying that he contemplated a full bibliography, but abandoned it, in consequence of the great dimensions to which the work had grown. He, however, gives a list of the works in which a full bibliography may be found. We regret to be compelled to add that he has made an unwarrantable use of some of the references in this list, and has displayed a wealth of bibliographical acquirement for which he is indebted to others. We find, especially, that he has not only plagiarized references, but has transcribed paragraphs and sentences without acknowledgment. Several volumes of Ziemssen's *Cyclopædia* have been made use of with a freedom which only a liberal application of quotation marks could warrant. We select some of those to indicate the mode in which a big book may be constructed with little more than mechanical dexterity.

We may begin our examination at various points, but let us first take up Poliomyelitis Anterior Acuta; see page 122, vol. ii. of Ross, and p. 671 vol. xiii. of Ziemssen (Am. ed.).

Ross, ii. pp. 122-3.

The other most notable cases which have been reported at an early period of the disease are those of Roger and Damasehino, Roth, Leyden's second case, Parrot, and Joffroy, and a case briefly reported by Rinecker, which was examined by Von Recklinghausen. No marked changes were discovered in the cord with the naked eye. In some cases the substance of the cord seemed tougher at the level of the cervical or lumbar enlargements, and the antero-lateral column on the affected side appeared atrophied and distorted. On transverse section the anterior gray horns were observed to be more or less discoloured, whitish or reddish, sometimes soft, diffuent, and diminished in volume. The anterior roots at the level of the parts mainly affected were found gray, translucent, and atrophied. . . . In the lumbar region, sometimes on one side only, but usually both sides, an area of softening has been found, in the anterior gray horn, sometimes extending the whole length of the lumbar enlargement, and sometimes only a portion of it in longitudinal extent. The area of softening was sometimes situated toward the centre, sometimes toward the anterior part of the horn, being separated from the surrounding parts by a sharp line of demarcation. . . . The substance of these areas was friable, soft, and disseminated with numerous granulation cells. . . . The nerve fibres and axis cylinders within the area of softening were also found to have entirely disappeared.

ERR, Ziemssen, vol. xiii. p. 671.

Observations made *at an early period of the disease* (Roger and Damaschino, Roth, Leyden's second case, Parrot, and Joffroy, probably also the case very briefly reported by Rinecker and examined by Von Recklinghausen) show that sometimes nothing abnormal about the spinal cord can be discovered by the naked eye; sometimes the substance of the cord seemed tougher at the height of the cervical or lumbar enlargements, and there was a slight dwindling of the cord, especially at the expense of the antero-lateral columns. On making a transverse section, the markings were somewhat indistinct, the anterior gray substance was more or less discoloured, whitish or reddish, sometimes soft and diffuent; sometimes a diminution in volume of the anterior gray horns can be shown. The anterior roots—corresponding to the main seat of the disease—are gray, translucent, and atrophied. . . . particularly at the lumbar enlargement. Here we find, usually on both sides, though sometimes only on one side, an area of softening in the anterior gray horn of greater or less longitudinal extent. . . . sometimes situated more towards the centre, sometimes more towards the front of the horn, and is separated from the surrounding parts by a more or less sharp line of demarcation. . . . Their substance is friable, soft, and disseminated with numerous granulation cells. . . . The nerve fibres and axis cylinders within the area of softening are also found to have entirely disappeared.

Ross, *Ibid.*, p. 124.

The anterior roots are diminished in size, and show signs of degenerative atrophy when examined microscopically. Observations have been made, from seventeen to sixty-one years after the origin of the disease, by Cornil, Prevost and David, Vulpian, Lockhart Clarke, Chareot and Joffroy, Petit fils and Pierret, Leyden, Gombault, Déjerine, F. Schultze, and others.

These extracts are fair specimens of the close adherence of Ross to the work of Erb. In fact, the matter contained in the pages 111 to 126 inclusive, on the subject of poliomyelitis anterior acuta, are almost entirely taken from Erb, some changes of expression being introduced now and then. We do not find any allusion to Erb, any quotation marks, or other evidences of indebtedness. In the chapter on myelitis the appropriations are numerous and extensive. Some alterations in phraseology are occasionally made, but sentences and whole paragraphs are appropriated and exactly reproduced. If the reader will now turn to the chapter on myelitis in Ross's book, and compare it with Erb's treatment of the same subject in Ziemssen's *Cyclopædia*, vol. xiii. page 393 *et seq.*, he can verify the extracts below.

Ross, *Ibid.*, p. 399.

As the disease progresses, the affected parts become paler and softer. . . . The change of colour from red to yellow is due partly to the diffusion and alteration of the colouring matter of the blood, and partly to the fatty degeneration of the medullary sheaths, and the formation of masses of fat granules. . . .

Owing to the continued process of fatty degeneration, the colour becomes progressively whiter, and the diseased portions assume a creamy or milky appearance. The medulla now swells up above the cut surface and assumes a pulpy or even fluid consistence, and often flows out of the sac of the pia mater. After a time nothing remains of the inflamed spot but the vascular network and a portion of the hypertrophied septa, between which a softened mass is held that can be readily pressed out.

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The absorption of the softened masses continues until all the fluid portions have completely disappeared. Nothing remains but the vascular and connective-tissue network, which are in part thickened and hypertrophied. They

ERB, *Ibid.*, p. 673.

The anterior roots are diminished in size, atrophied, and under the microscope show the signs of degenerative atrophy. . . . We have such observations, made between seventeen and sixty-one years after the origin of the disease, by Cornil, Prevost, Vulpian, Lockhart Clarke, Chareot and Joffroy, Petit fils and Pierret, Leyden, cases 1 and 3, Gombault, Déjerine, F. Schultze, and others.

ERB, *Ibid.*, p. 394.

As the disease progresses the affected spot becomes constantly paler and more and more softened. Its colour changes gradually from red to yellow; this change is due partly to the diffusion and alteration of the colouring matter of the blood, partly to the fatty degeneration of the medullary sheaths, and the formation of masses of fat granules. . . .

In consequence of the accumulation of fatty detritus, the colour becomes progressively whiter, and the entire substance assumes a creamy or milky appearance. . . . The medulla swells up very much above the cut surface, acquires a pulpy, even a more fluid consistency, and often flows out of the sac of the pia entirely. . . . At last nothing remains of the diseased spot but the vascular network and a portion of the hypertrophied septa, between which is a softened mass that can readily be pressed out.

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The resorption of the softened masses continues until finally all the fluid portions have completely disappeared. Nothing remains but the vascular and connective-tissue networks, which are in part thickened and hypertrophied;

form a more or less dense, shrivelled, grayish, semitransparent eicatrix which is often pigmented. . . .

More or less extensive collections of fluid may be left behind in the meshes of the eicatrix, and lead to the formation of single or multiple cysts. They usually contain a muddy fluid resembling milk, or more frequently serum.

In some cases the interstitial tissue becomes hypertrophied and consolidated. It increases in thickness and density; the vessels become larger and their walls thicker; the previously softened spot becomes firmer and denser, gray, and semitransparent, and presents a marked contrast in colour and consistency with the surrounding parts.

Page 281.

In the first stage there is marked dilatation of the capillaries and small arteries, and more especially of the small veins. They are distended with blood, and not unfrequently enveloped in layers of white and red blood-corpuscles arranged in the form of a sheath. . . .

Marked changes are found in the neuroglia. The fibres of the reticulum are thickened and swollen; the network is much denser and more distinct, and in part filled with nuclei and with cells. The glia cells themselves are swollen and increased in number, and often contain several nuclei. Granule-cells in greater or less number are found either in the immediate neighbourhood of the vessels or scattered irregularly in the interstitial tissue and its meshes.

The same careful appropriation of Erb's work extends on through this section for several pages. The reader may also compare Ross's description of the "Symptoms," beginning on page 273 (vol. ii.) and ending on 277 inclusive, with Erb's account, from page 402 to page 414; also the "Diagnosis" by Ross, p. 289, and the same by Erb, p. 419; and the "Prognosis" by Ross, p. 290, and the same by Erb, pp. 420 and 421. In these portions of the two works the same correspondence will be found; sentences, paragraphs, and current references are utilized by Ross, with trivial variations, from Erb's text.

If our readers will now also compare the chapters in the two works on *Tabes Dorsalis*, remarkable and extensive correspondences will be seen. We could transcribe pages, but it is useless to cumber our columns with so much. The comparison may readily be made by any one interested in the demonstration. We begin at the morbid anatomy.

they form a more or less dense, shrivelled, grayish, semitransparent eicatrix, which is often flecked with pigment. . . .

. . . More or less extensive collections of fluid are left behind in the framework of the eicatrix, and lead to the formation of single or multiple, large or small cysts. They usually contain a muddy fluid resembling milk, or more frequently serum.

In many cases, on the contrary, the interstitial supporting framework becomes in course of time greatly hypertrophied and consolidated. It increases in thickness and density; the vessels become larger, and their walls thicker; the previously softened spot becomes firmer and denser, gray, and semitransparent, and presents a marked contrast in colour and consistency to the surrounding parts.

Page 396.

In the first stage we find marked dilatation of the capillaries and small arteries, and more especially of the small veins; they are distended with blood, and not unfrequently enveloped in layers of white and red blood-corpuscles arranged in the form of a sheath.

Marked changes are always found in the neuroglia. The fibres of the reticulum are thickened and swollen; the network is much denser and more distinct, and it is in part filled with nuclei and cells. The glia cells themselves are swollen and increased in number; they often contain several nuclei. . . . We generally find granule-cells in greater or less numbers, partly in the immediate neighbourhood of the vessels, partly scattered irregularly in the interstitial tissue and its meshes.

Ross, *Ibid.*, p. 237.

. . . A gray or grayish-yellow discoloration may be observed along the posterior median fissure extending almost the entire length of the cord.

Page 238.

. . . In the inferior portion of the lumbar enlargement there is frequently only a slight gray discoloration in the external half of the posterior columns; but on ascending it increases in width, so that in the upper half of the lumbar enlargement the discoloration embraces the entire transverse section of the posterior columns. The whole of the posterior columns are usually affected throughout the entire length of the dorsal region, but its extent diminishes again in the cervical portion, and the degeneration becomes limited in the upper cervical region to the columns of Goll. As a rule, the intensity and extent of the morbid process is greatest in the upper lumbar and dorsal portions, diminishing both upwards and downwards from these points.

If the reader will now take up the symptoms, he will find that nearly every sentence in Ross's account is to be found in Erb's. The only place where Erb is credited with any statement is on page 224, where his name appears in brackets. We might illustrate the method of manufacture by some extracts, but we have devoted enough space to these few pages. In Chapter III. of the second volume, at page 511, Ross begins the consideration of "focal diseases" by an account of "Occlusion of the Cerebral Arteries." In *Ziemssen's Cyclopædia*, vol. xii., this topic is discussed by Nothnagel. We find here a close correspondence, but, as Ross gives much less space to the subject, he more often paraphrases. As a specimen of this, and to exhibit the mode of his bibliography, we quote the following:—

Ross, p. 517, vol. ii.

Experimental Investigations.

The first experimental researches with respect to the embolic process were undertaken by Virchow, and great additional light has been thrown on the subject by the important experimental and microscopical investigations of Cohnheim. Panum studied experimentally the results of occlusion of cerebral vessels with the view of determining the manner in which death is caused. B. Cohn investigated experimentally various clinical and anatomical points; Feltz studied the results of capillary embolism; while Prévost and Cotard made a series of experiments with the view of determining the relation of occlusion of cerebral vessels to softening.

ERB, *Ibid.*, p. 531.

. . . We may recognize a gray or yellowish-gray discoloration along the posterior median fissure, at both sides of the same, extending almost throughout the entire length of the spinal cord.

Page 532.

. . . In the lowest lumbar division we often see but a slight gray discoloration in the external half of the columns; this increases in width as we ascend, until finally, in the upper half of the lumbar enlargement, the entire transverse section of the posterior columns appears discoloured; this then generally continues upwards throughout the entire dorsal portion, again to diminish in the cervical portion, and finally to be limited to the columns of Goll. In the majority of cases, therefore, the rule holds good that the intensity and extent of the process is greatest in the upper lumbar and the dorsal portions, diminishing both upwards and downwards from these points.

NOTHNAGEL, p. 193, vol. xii.

Experimental Investigations.

The first experimental inquiries into the subject of thrombosis and embolism . . . we owe to the labours of Virchow. . . . That Panum studied the occlusion of cerebral vessels, especially with the view of determining the manner and cause of death; that B. Cohn investigated experimentally various clinical and anatomical points; whilst Feltz treated particularly of capillary embolism. Prévost and Cotard made a series of careful experiments bearing upon the subject of the obstruction of cerebral arteries, and its relation to softening; and, finally, the important experimental and microscopic investigations of Cohnheim. . . .

Next turn to "Thrombosis of the Cerebral Sinuses," Ross, p. 518, *Ibid.*, and Nothnagel, p. 209, *Ibid.*

ROSS.

History.—Special attention was first directed to the subject of thrombosis of the cerebral sinuses by the observations of Tonnelé. Many valuable clinical observations with regard to the disease were made by Puchelt, and the attention of Lebert was also directed to it. The treatises of Von Dusch, B. Cohn, and of Lancereaux helped greatly to extend and to systematize our knowledge with respect to this thrombosis; and in more recent times our knowledge has been further increased by the labours of Gerhardt, Griesinger, Corazza, Heubner, and Huguénin.

If the reader will compare the sections on "Etiology," he will find not only paraphrases, but entire sentences copied. The following may serve as a sample:—

Ross, p. 519.

Cohn observed a case in which suppurative phlebitis of the cavernous sinuses occurred in connection with purulent inflammation of the deep muscles of the neck.

Every statement contained in Ross's account of the "Morbid Anatomy," on page 522–23, is contained in Nothnagel's account of the same subject, and much of it is *verbatim*. An equally close correspondence is to be discovered in the section on "Symptoms." In the chapter on "Occlusion of the Cerebral Capillaries," the opening and many subsequent sentences are appropriated.

Ross, p. 523.

Experimental investigations have shown that marked disturbances of the cerebral functions may be caused by occlusion of the cerebral capillaries. . . .

Symptoms.—The experiments of Feltz and of Prévost and Cotard show that extensive embolism of very fine particles may rapidly induce death in animals by causing diffuse anæmia of the brain.

Morbid Anatomy.

Capillary occlusions are, of course, only to be detected with the microscope. Delacour says that, in cases of lime metastasis, a resistance is felt to the knife in cutting through the brain, and rough prominences may be felt on the surface with the finger.

NOTHNAGEL.

. . . The credit of having formulated it as a specific disease belongs to Tonnelé. The investigations of Puchelt did not receive the notice which they deserved; those of Lebert on inflammation of the cerebral sinuses attracted more attention, and the more recent treatises of Von Dusch, B. Cohn, and Lancereaux assured to thrombosis of the sinuses . . . and at the same time and at later periods our knowledge of the disease . . . was increased through the labours of various observers; we would refer particularly to those of Gerhardt, Griesinger, Corazza, Heubner, and Huguénin.

NOTHNAGEL, p. 212.

B. Cohn observed a case in which suppurative phlebitis of the cavernous sinus occurred in connection with purulent inflammation of the deep muscles of the neck.

NOTHNAGEL, p. 223.

A series of experimental investigations has shown that the extensive occlusion of cerebral capillaries may give rise to even very marked disorders of the cerebral functions.

Symptomatology, p. 227.

. . . Through the experiments of Feltz, Prévost, and Cotard, that extensive embolism of very fine particles may in animals rapidly induce death, resulting from the diffuse anæmia of the brain.

Pathological Anatomy, p. 226.

The occlusion of the capillaries is, of course, only to be detected with the microscope. . . . In lime metastasis, according to Delacour's description, a resistance is felt to the knife in cutting through the brain . . . while on the cut surface itself small, rough prominences are to be felt with the finger.

We find the same unacknowledged appropriation of material in all parts of the work devoted to morbid anatomy, symptoms, etiology, etc. The various chapters in the volumes of *Ziemssen's Cyclopædia* devoted to diseases of the nervous system have furnished this material. Of the rest of the work, we have before indicated the sources of supply. The expressions of opinion, the names of contributors to particular questions, have alike been obtained by Dr. Ross from these works. He does now and then report a case and express his views, it is true, but his contributions to the subject-matter of the two volumes may be included in less than fifty pages. To call the work "*A Treatise on the Diseases of the Nervous System by James Ross, M.D.*," seems to us an assumption not warranted by the state of facts above given. In the first paragraph of the preface, Dr. Ross states that "it would be invidious to single out for special mention a few of the many authors I have had occasion to consult; I must, therefore, ask them all to accept the simple acknowledgment conveyed in the insertion of their names in the text." Invidious, truly! The authors referred to owe the insertion of their names in the text to the writers from whom Dr. Ross has appropriated it.

R. B.

ART. XXXI.—*A Treatise on Human Physiology, designed for the Use of Students and Practitioners of Medicine.* By JOHN C. DALTON, M.D., Professor of Physiology and Hygiene in the College of Physicians and Surgeons, New York. Seventh edition. 8vo. pp. 722. Philadelphia: Henry C. Lea's Son & Co., 1882.

A NEW edition of this popular text-book will be heartily welcomed by teachers and students, and all the more so when they find a new issue, not only without increase in size, but with an actual reduction of nearly 100 pages. This in itself indicates that there has been a process of judicious winnowing, which a careful comparison with the last edition shows to have been admirably effected, without any material sacrifice.

The section on Physiological Chemistry—always a well-arranged and useful one—has received thorough revision. The old term proximate principle has been abandoned, and much new matter added, particularly on the ferments and albuminous substances. We miss and regret, under "Digestion," the familiar figures illustrating useful points in the comparative anatomy and physiology of this process. The recent observations of Heidenhain, Kühne, and others on the nature of gastric and pancreatic digestion have been incorporated, and there is a pleasing absence of doubtful minutiae, so confusing to the student. In discussing the coagulation of the blood no reference is made to the important part believed to be played by the colourless corpuscles, or to Buchanan's original investigations, which, as Gamgee has shown, anticipated the more recent views of Schmidt. The chapter on the circulation presents very few changes; a new cut and more extended description of the normal sphygmographic tracing would have been advantageous. Why is there no account of the physiological anatomy and histology of the kidney? We have frequently heard students and others refer with surprise to this omission. The chapters on the nervous system have been carefully revised, and the

author expresses himself strongly in favour of the modern views on cerebral localization. Justice is scarcely done to the opponents of these theories; indeed, they are not even mentioned. The chapter on the sympathetic system has been in great part rewritten, though here, too, we are surprised that the important observations of Goltz are not referred to. The section on reproduction has long been regarded as the strongest in the book. The general standard is maintained in this edition, and new matter has been incorporated. A reference to the early changes in the germ and the mechanism of fecundation, as worked out by several recent observers, would have been appropriate, and the important contributions of Leopold on the physiology of menstruation would have added to the value of the section.

An excellent feature in this edition is the number and beauty of the figures; many of the old ones have been re-cut, and the new ones are of very superior finish. Altogether the work is in every way worthy of the confidence which teachers and students have given it during the past twenty-five years.

W. O.

ART. XXXII.—*A Text-book of Practical Medicine, with Particular Reference to Physiology and Pathological Anatomy.* By Dr. FELIX VON NIEMEYER, Professor of Pathology and Therapeutics, Director of the Medical Clinic of the University of Tübingen. Translated from the eighth German edition, by George H. Humphries, M.D., and Charles E. Haekley, M.D. In two volumes, pp. 767 and 861. Revised edition. New York: Appleton & Co., 1881.

A GLANCE at the prefaces to this edition of Niemeyer's well-known Practice, and a comparison of the dates therein set down, cannot fail to arouse the interest of him who gives heed, even in the most general way, to the course of the medical literature of the day.

Over date of Tübingen, October, 1867, the author, in his preface to the fourth edition, informs us that nearly ten years elapsed since the first appearance of his work. Over date of New York, May, 1880, his translators, in their preface to the edition under consideration, among other matters of interest relating to the history of the book, recall the fact that Niemeyer died in 1871, "in the prime of life and mental vigour," *about fifty years of age*.

This text-book, accepted as such all over Germany, where it reached a seventh edition within ten years, and where it still holds its own—known in the original or by translation as a standard work the world over—now reissued in America after a quarter of a century, useful, vigorous, welcome, almost fresh, whilst scores of text-books upon practice have appeared, proved useless, feeble, unwelcome, and stale from their inception, and have been forgotten—this book, if these dates be correct, was given to the world when its author was about *thirty-six years of age*. Well may his translators say that his death at fifty was a great loss to the medical profession! Well may they lament his untiring industry, his rare experience, his great abilities as a teacher! The names that are conspicuous in medicine are the names of men whose industry sprang from the enthusiasm of youth, whose abilities as observers and teachers were

wedded to the vigour of early manhood, and whose experience is to be measured by its fibre rather than by its length. Bright among these names is that of Felix von Niemeyer, of Tübingen.

Some years after his death, an edition of his book was brought out in Germany. The changes in the text were extensive, and much new matter was added. The book, in consequence of the condensation thus rendered necessary, lost much of the charm of style and description that it had owed to the author's pen. The translators have adhered as closely as possible to the original manner, and whilst drawing freely upon the last German edition, have made no attempt to make a close translation of it. They have also made such additions from other sources as appeared to them "*calculated*" to render the work more useful to the "American reader." Among these additions are brief articles upon "Chronic Poisoning by Alcohol and Morphine, as well as upon Wandering Spleen, Paralysis Agitans, Scleroderma, Elephantiasis Græcorum, and Progressive Pernicious Anæmia." A chapter upon Yellow Fever has also been added. This, we are informed, has been compiled chiefly from Bartlett's "Fever of the United States," edited by Alonzo Clark.

In a full notice of the translation of 1869, which appeared in this Journal in January, 1870, testimony was borne to the excellence of the translation, and the manner in which the work was issued. In the present issue there is no falling off in these matters.

The plan of the work does not include general introductory considerations upon pathology and therapeutics. The first volume treats of diseases of the respiratory organs, of the circulatory organs, of the organs of digestion, of the liver and bile-ducts, and of the spleen. The first chapter begins with the consideration of hyperæmia and catarrh of the mucous membrane of the larynx. The second volume deals with diseases of the urinary organs, diseases of the male and female sexual organs, of the nervous system, of the skin, of the organs of locomotion, and with constitutional diseases.

The progress of medical literature during the last ten years, its specialization and organization, have brought the quarters of the medical world into close and rapid intercommunication with each other, and German modes of thought in science, and German views upon matters of pathology and therapy have no longer the air of newness that they wore when Niemeyer's work first came among us. Moreover, clinical medicine has meanwhile made great gain of knowledge, not alone through investigations within the boundaries of her own proper domain, but also within the provinces of physiology, pathological anatomy, and applied chemistry. Important questions have been settled, obscure points made clear, false theories done away with, errors brought to light, and facts accumulated until the mass of knowledge is beyond the grasp even of a master intellect, and comprehensive treatises upon medicine must henceforth be the work of several authors working together, each in his separate and limited sphere; in other words, for purposes of reference, the system must take the place of the text-book, and the system must not only be new, but it must be constantly renewed.

For these reasons this translation of Niemeyer, too bulky and not quite recent enough for the student, cannot be regarded as desirable as a book of reference for the active clinician, the "busy practitioner," as the professional reviewer, who writes much, reads little, and too often does not see any patients at all, is apt to call his more fortunate brother in medicine.

The well-written additions of the revision fail to bring it up to the standard required by a profession whose unsparing work makes it a niggard of time. Niemeyer's work, despite its graphic descriptions, its lucid and attractive style, its fulness of fact, of thought, its ineffaceable stamp of intellectual vigour and originality, or by very reason of all these, must take its place among medical classics, a monument of its author's greatness. There, where it now rightly belongs, the less tinkering it has had since the hand that wrote it laid it down, the more valuable will it be, and he, who in the future shall desire to know Niemeyer, will turn not to the greatly improved and altered edition of Dr. Scitz, nor to the American translation of 1880, but to the last editions in which the revisions are the work of the author himself.

To-day, when the announcement of the observations of Dr. Koch has bent anew the energies of pathologists upon the subject of the origin of consumption and tuberculosis, the familiar theories of Niemeyer assert their importance.

J. C. W.

ART. XXXIII.—*Health Reports.*

1. *Fifth Annual Report of the Board of Health of the State of New Jersey*, 1881. Mount Holly, N. J. pp. 344.
2. *Fourth Biennial Report of the State Board of Health of Maryland*, January, 1882. Frederick, Md. pp. 212.
3. *Annual Report of the Board of Health of the State of Louisiana to the General Assembly for 1881*. New Orleans, 1882. pp. 427.
4. *Third Annual Report of the State Board of Health of Illinois; with the Official Register of Physicians and Midwives for 1880*. Springfield, 1881. pp. 325.

1. THE *New Jersey Health Report* is, as we might anticipate from its being the production of such an eminent sanitarian as Dr. Ezra M. Hunt, replete with useful facts and valuable suggestions worthy of the high place which public hygiene has attained in modern civilization.

As remarked by Dr. Hunt:—

“The care of the public health is no longer regarded as merely a professional concern, or one of generous patronage. The welfare of the State and its highest material interests depend very much upon how far it promotes the health and life of the citizen. It is *political economy* that requires the closest attention to the subject. It has been said that the progress of a people can be tested by the exactness of the attention given to the prevention of preventable diseases. It would seem as if the test were a safe one, for the greatest progress in statistical inquiry, and in the provision of State oversight, has been made by those who in other respects are admitted to be the most prosperous.”

It is gratifying to learn from the Report that the judicious improvements in drainage on a large scale at Bound Brook, where it may be remembered that a widespread epidemic of malarial fever, in 1880, attracted public attention, have almost entirely obviated this source of disease; and that any recurrence of the typhoid fever epidemic at Princeton, so disgraceful, so *shameful*, to an institution claiming its high rank as an educational centre, is probably provided against by an improved system of water supply and sewerage.

Encouraging progress is stated to have been made in the important work of inspecting the condition of the hotels at the many sea-side resorts on the New Jersey coast, particularly in regard to the disposal of sewage and the provision of means for escape in case of fire.

An effort of the very mildest kind has been inaugurated to regulate medical practice in the State by requiring practitioners to register and exhibit their diplomas, so that, without indorsing all these as competent physicians, the law demands that, in so serious and important a business as the special care of human life, the person who offers his services as a physician or surgeon must at least have the testimony of some incorporated school or licensing body that the necessary preliminary studies have been pursued. Reasonable complaint is expressed that the inspection of milk and the examination of foods, etc., suspected of being adulterated, are incomplete for want of a sufficient appropriation from the Legislature.

The first paper, entitled *The Relation of the State Board of Health to our Public School System*, by Laban Dennis, M.D., of Newark, is an earnest plea in favour of systematic instruction in anatomy, physiology, hygiene, and general sanitary science in all grades of schools and educational institutions. In arguing against the supposed impracticability of this project, however, the author does not seem to be aware that, on the continent of Europe, as, for example, in the city of Brussels, Dr. Janssens has had in operation an even more complete plan for the sanitary care and instruction of pupils in the public schools, with eminently satisfactory results.

This essay is followed by interesting articles on *Typhus Fever at Camden County Almshouse*, by the Secretary; *Facts as to the Abatement of the Bound Brook Malaria*, by C. M. Field, M.D.; and *Citations from the Law Relating to Nuisances*, by E. S. Atwater, Esq.

The separate reports of the members of the Council of Analysts, which come next in order, give evidence of a great amount of labour on suspected foods, drugs, etc., performed, too, largely as a matter of charity to the State, the compensation being totally inadequate. Among the more important results we note that tea and coffee were found generally pure, candies and spices were as generally adulterated, while sago and tapioca were entirely fictitious, being largely made up of corn starch (for which the careless blunder of "Tea mais starch" in the report is doubtless intended).

The Secretary further contributes instructive papers on *Animals as Related to Human Disease*, and *the Care of the Public Health*, and on *A Study of Consumption as a Preventable Disease*, which, with reports on vital statistics, circulars and laws, climatology, and a catalogue of the valuable library belonging to the board, make up the remainder of the volume.

2. In the *Maryland Report* the detailed account of the work of the Board by the industrious Secretary, Dr. C. W. Chancellor, opens with a just and earnest tribute to the memory of Dr. Edward L. Howard, whose ability as a sanitarian renders his death a serious loss to the cause of sanitary science in this country. Considerable difficulty seems to have been found in establishing local health boards under the auspices of the State organization, but, thanks to the tireless efforts of the Secretary in arousing public attention by personal visits, hygienic lectures, etc., a majority of the counties in Maryland are now furnished with this important

means for the preservation of health. Dr. Chancellor's report also contains much excellent advice in regard to disinfection, value of vaccination, protection against typhoid fever, scarlatina, diphtheria, and on kindred topics.

Following the tables of vital statistics, and statements of some of the local health boards, appear sundry papers contributed by eminent medical gentlemen of Maryland. The first of these, by Prof. S. C. Chew, M.D., of the University of Maryland, on the *Avoidable Causes of Bright's Disease*, contains a strong plea against the abuse of alcohol, as one of the most common and dangerous foes to the integrity of the renal organs. A second essay on *Water, and the Water Supply of Cumberland, Md.*, by Dr. D. P. Wellsley, comprises the results of numerous samples of spring, well, eistern, and river waters, many of which were found to be suspicious or unfit for use. The third paper, on *Physical Education*, is furnished by Dr. Joseph T. Smith of Baltimore, and enunciates the same old but ever needed warnings against the neglect of due *bodily* for excessive *mental* exercise.

An appendix, giving much judicious and timely popular information on sundry hygienic subjects, has been compiled by Dr. Chancellor from the Reports of the Massachusetts and Michigan Health Boards, and other original sources of sanitary knowledge; and the volume closes with an interesting account, also by the Secretary, of the Epidemic of Diphtheria in Frederick City, and of Smallpox in Charles Co., Md.

3. More than one-third of the *Louisiana* Health Report is taken up with the further presentation of Dr. Jos. Jones's side in his unfortunate quarrel with the National Board of Health. In it we find expressed in eloquent and forcible language the same bitter complaints of personal liberty invaded, individual judgment disputed, and constitutional rights assailed, which Prof. Jones has, we doubt not, often cut short, as they were poured out by unhappy patients and their luckless comrades, whom he has imprisoned in smallpox hospitals, or shut up in yellow fever quarantines sorely against their will.

The really sanitary portion of the report, commencing on p. 120, considers first the admirable effort made by Prof. Jones, as President of the Board of Health, to restrict the *sale of poisons and the adulteration of food* in New Orleans. Poisoning by cyanide of potassium is illustrated by some interesting cases and an extended series of experiments upon animals, as is also the subject of poisoning by carbonic oxide and other gaseous impurities of the air. In his investigation of the different kinds of sugar and molasses in the New Orleans market, Dr. Jones concludes that the Louisiana is superior in every respect to the Cuba or the northern molasses; and that from an economic point of view five pounds of glucose should only cost as much as two pounds of sucrose or cane sugar. Dr. Jones also points out the dangers from adulterated milk and infected meat, judiciously urging the systematic inspection of these two important articles of diet, which does not appear to have been as yet practised in New Orleans.

Section fourth of the report is devoted to the *preventable causes of diseases* and deaths arising from the infectious and contagious diseases. Under this head Dr. Jones treats at some length of yellow fever, in regard to which his extended experience of twenty-seven years renders his opinion of especial value. He declares that the older statements that yellow fever

never extended above a height of 2500 feet are shown to be incorrect; that, however violent the disease may be at any place, "it is arrested from the day on which the earth is frozen, and such localities may then be visited with impunity by strangers," that it is contagious, and as a general rule occurs but once during life. In regard to the prophylactic treatment, our author declares that "experience has established the possibility of excluding yellow fever from localities in which it has prevailed as an epidemic, subsequent to its introduction from other regions, by means of an absolutely strict quarantine. But hitherto it has been almost impossible to arrive at any definite conclusions as to the value of quarantine in those regions in which the disease is endemic and indigenous." As to the value of disinfectants, he thinks it very doubtful whether much of the benefit claimed for them is not due to other causes, and in regard to quinine he maintains that it is of use rather as an antidote to the effects of the poison, than of the poison itself. Though no efforts have been made in New Orleans to control the spread of venereal disease, Dr. Jones urges the question upon the attention of the Governor and Legislature, correctly maintaining that much good will be accomplished by the institution of a proper system of medical inspection, treatment, and police regulation of prostitutes.

Voluminous tables, etc., giving the meteorological, vital, and mortuary statistics of New Orleans, and pointing out the progress of sanitary reform, occupy Section V. of the Report; Section VI. is made up of the reports of sanitary inspectors, quarantine officers, and other officials; and the last ninety pages of the volume contain the detailed proceedings of the Board, which give evidence of a vast amount of useful sanitary work, chiefly, if not wholly, performed by its indefatigable and industrious President, Prof. Jones.

4. Nearly five-sixths of the *Illinois* Report is made up of the official register of physicians and midwives, to whom certificates have been issued by the State Board of Health. This list of 5596 practitioners, who minister to the bodily ills of the 3,078,636 inhabitants of the State, may not be quite so instructive to sanitarians generally as health reports usually are, and yet it represents an extraordinary amount of careful and fruitful toil on the part of the officials, which must be more prolific to the people of the State, in the preservation of life and health than many far more pretentious essays.

The volume opens with the report of the able Secretary, Dr. John H. Rauch, comprising the abstract of proceedings, and special statements in regard to canal and river improvements, on the Medical Practice Act, and on general sanitation. From these we learn that nine of the certificates formerly granted had been revoked during the year for cause, chiefly unprofessional conduct, in some cases of a very flagrant character. Some of the medical colleges accused of selling diplomas without study, or after insufficient study, had been further investigated. Six of these institutions had raised their standard, and improved their course of instruction; but thirteen had been definitely rejected as not in "good standing," and their diplomas refused.

A most important document is the report of a committee appointed to recommend a standard which shall be required of colleges to entitle their diplomas to be accepted by the Illinois Board of Health. In order to fulfil their duty this committee addressed a circular of inquiries to the

medical colleges of the United States, and to numerous eminent medical gentlemen, which elicited eighty-seven replies. Upon the basis of these the committee advise that a medical college, to be considered in "good standing," must require a preliminary examination or its equivalent; must include in its courses of instruction (besides the usual seven branches), "8. Hygiene and sanitation; 9. Medical jurisprudence;" must demand attendance on at least eighty per cent. of the lectures, in two full courses of five months each, not within the same year; and must compel each student to study three full years, dissect during two courses, and attend two terms of clinical and hospital instruction. This report was unanimously adopted, so that after the medical college session of 1882-83 it becomes the rule of the Board, and will, we hope and believe, do more to protect the people of Illinois from ignorant and knavish quacks, in the guise of true physicians, than any measure which has hitherto been instituted by sanitary authorities in this country. An instructive table, opposite p. 46, showing the courses of study, etc. of colleges whose diplomas are recognized, informs us that of the 45 regular medical schools there mentioned 18 require an examination to be passed in "Hygiene and Sanitation," as a necessary condition for graduation. J. G. R.

ART. XXXIV.—*Supplement to the Descriptive Catalogue of the Pathological Museum of the Pennsylvania Hospital.* By MORRIS LONGSTRETH, M.D., one of the Attending Physicians and Pathologist and Curator to the Pennsylvania Hospital, etc. pp. 219. Philadelphia: Collins, Printer, 1882.

WITHOUT a good descriptive catalogue a museum is of very little use; with one, it at once becomes an important means of study and instruction, more so, indeed, than is usually recognized. Any one who has attended a museum class at one of the London medical schools can appreciate the amount of practical information in medicine and surgery which can in this way be imparted. But in the absence of a systematic method, any intelligent student, with a good catalogue in his hand, can devote profitable hours to study of this sort. Unfortunately, there are catalogues and catalogues; some are little more than transcripts of the labels on the jars; others are concerned almost exclusively with the descriptions of the specimens; whereas the typical catalogue gives a *résumé* of the history, as well as a detailed account of the preparation. To this last division belongs the one of the Museum of the Pennsylvania Hospital, prepared by Dr. Longstreth, which forms a supplement to the Descriptive Catalogue prepared by Dr. Pepper in 1869, and contains an account of the specimens added since that date. We once heard a master in the profession say that he judged a hospital by the way in which the post-mortem work was done; and there is much truth in the remark, for careful clinical men know full well that the key to many of the problems at which they work is to be found in the dead-house. This catalogue may be regarded as describing the more interesting specimens obtained from the hospital during the past ten years, and it shows at once the intimate relationship which exists between clinical and pathological work in this institution. A striking feature of it is the prominence given to clinical details; in almost every

instance, after a statement of the condition of the specimen, and an explanation of what it shows, the history of the case is given in brief. We do not remember to have seen any catalogue in which this excellent practice has been carried out to the same extent. We congratulate Dr. Longstreth and the hospital on the way in which this work has been performed. We had occasion lately to go through some ten pathological museums of the different schools and hospitals in this country, and were in a position, on arriving at the Pennsylvania Hospital, to appreciate fully the advantage of a good catalogue.

W. O.

ART. XXXV.—*Causes of Deafness among School Children, and its Influences on Education, with Remarks on the Instruction of Pupils with Impaired Hearing, and on Aural Hygiene in the Schools.* By SAMUEL SEXTON, M.D., Aural Surgeon to the New York Eye and Ear Infirmary. Member of the American Otological Society, etc.
Circular of Information of the Bureau of Education, No. 5, 1881.
 Washington: Government Printing Office, 1881.

HON. JOHN EATON, Commissioner, says, in a letter dated Washington, Sept. 24, 1881, and addressed to the Hon. Secretary of the Interior, "The causes of deafness among school children are numerous and important enough to justify a special investigation of the subject," and he therefore requested Dr. Sexton to prepare a paper on this subject. Dr. Sexton has accordingly presented in this valuable brochure the more practical conclusions regarding the causes of deafness among school children, together with suggestions of a hygienic and prophylactic nature drawn from his own observations among a large number of pupils in dispensary, hospital, and private practice.

He also gives a brief description of the structure of the ear, together with its physical and physiological functions, wood-cuts of its deeper and invisible parts, and a most excellent description of the sympathetic relations between the teeth and the ears, because *diseased states of the former have so great an influence on the acoustic organs, especially of the young.*

Pages 11 to 16 inclusive alone would make this brochure so valuable to the general practitioner as to justify him in going to the trouble of sending to Washington for a copy, for in these pages the causes of many cases of deafness are set forth most plainly, and the *modus operandi* of cold in the head explained in the only scientific way.

Not only are the causes of cold in the head and consequent deafness explained most lucidly, but a preventive hygiene is marked out, so that teachers as well as parents will do wisely in reading it and carrying it out. Then there follows a graphic account of the unfortunate results of incapacitating deafness, and their ramifying evils throughout the various avocations. Thus the partially deaf child is slighted in his education, and falls short of the attainments otherwise possible to him. But what is still more important is that teachers who are partially deaf are now and then found only imperfectly fulfilling their duties. "Should an instructor himself be defective in his hearing sense, and yet unaware of the fact, it would be easy for him to unjustly censure children for incompetency in

the course of instruction, or in examinations for promotion, simply because their responses were not heard." He, therefore, suggests that "persons desirous of acquiring a pedagogical education at the public expense should be subjected to an aural examination before they are accepted, and in the appointment of teachers in the public schools the ability to hear well should be a requisite." (p. 25.)

When alluding to aural hygiene in the schools, Dr. Sexton says, "When we are appealed to as humanitarians to provide hospital accommodations for the poorer class, no means are spared in the planning and erection of healthful buildings for their use, but when school-houses are to be constructed—when both body and mind should be aided in development, prepared, I may say, to enter the struggle for 'the survival of the fittest'—their erection is, I fear, too often intrusted to the political contractor, whose knowledge in building is chiefly confined to 'making it pay.'"

The author then discusses the mistake of paying all attention to heating a school-room, and none to ventilation, the insufficient clothing of some school-children, and the excessive clothing of others, and the evils arising from out-door bathing. He further calls attention to the evils of mouth-breathing, directs us what to do when foreign bodies get into the ear, deprecates boxing the ears, and alludes to the misfortune of having a school-room so near a street as to be disturbed by its noises. The physical well-being of a child is often interfered with by the foulness of a discharging ear, and his mental condition greatly depressed by the knowledge that the offensive smell of his ear renders him an object to be avoided, not only by his fellow-pupils, but even by his teachers. From a purely cosmetic treatment, therefore, in such cases excellent moral results would accrue to patient, fellow-pupils, and teachers. We most heartily recommend this pamphlet to the careful attention of the profession.

C. H. B.

ART. XXXVI.—*A Case of Ectropion Successfully treated by Transplantation of Skin from the Arm and Forearm.* By LOUIS H. FOSSWILL, M.B. 12mo. pp. 10. London: J. & A. Churchill, 1882.

THIS pamphlet is a fuller account of a case already reported at the British Medical Association, but is worthy of notice from the character of the operation, and the success which followed it.

A boy, aged 10, had been so severely burned some years before as to have complete eversion of both left eyelids and the lower lip. The left cornea was inflamed and opaque, and the right opaque and staphylomatous, with some eversion of the lower lid. The left eye remained staring wide open during sleep. No healthy skin was available for a flap. Accordingly, after dissecting loose the two left eyelids, Mr. Fosswill pared their edges and united the lids by sutures. He then cut from the right arm and forearm, with a sharp knife, two semicircular pieces of skin, one $2\frac{1}{4} \times 1\frac{1}{2}$ inches, the other two-thirds as large, and placed them on the upper and lower raw surfaces. Each piece was freed from all areolar tissue and fat, and secured in place by fine silk sutures. Gold-beaters' skin, cotton-wool, and a bandage completed the dressing. On removal of the gold-beaters' skin on the sixth day the union was so firm that some stitches were removed,

and the remainder two days later. On the twelfth day the lids, which had united firmly, were separated, and the cornea was found greatly improved. Dressings were continued for five weeks. The upper ectropion was completely cured, the lower nearly so.

Mr. Fosswill recommends that the large skin graft be cut with a knife instead of scissors; that it be 50 or 60 per cent. in excess of the surface to be covered, so as to allow for shrinkage; that all areolar and fat be dissected off, even at the risk of loss of heat by the flap; that the sutures be numerous and fine, and that the dressings be but little interfered with, and continued for some weeks, with a view to warmth if nothing else. The gold-beaters' skin is of the greatest use in preventing the displacement of the flap, an irreparable disaster.

This extension of the experience of Reverdin and Ollier with the skin and periosteum promises to be very useful in the future. Our own essays with it have not been so successful, but we have learned much from our author's experience.

It is to be regretted that no illustrations accompany this interesting and instructive case.

W. W. K.

ART. XXXVII.—*Human Osteology, comprising a Description of the Bones, with Delineations of the Attachment of the Muscles, the General and Microscopic Structure of Bone and its Development.* By LUTHER HOLDEN, assisted by JAMES SHUTER. 8vo. pp. xii., 309. Pl. lxi, and wood-cuts lxxxix. Sixth edition. Philadelphia: Presley Blakiston, 1882.

THE appearance of a sixth edition of this well-known and excellent monograph is a healthy sign. We welcome it anew, and with the greatest pleasure both for its own and its author's sake. We heartily wish that more of our anatomical plates were not only as good, but as creditable to the author's skill as draughtsman, as these by Mr. Holden. It is a pleasure to see on each recurring lithographic plate, "From Nature by L. Holden." Besides a few minor improvements in this edition a few brief notes on Comparative Osteology have been added which, though not new or extensive, add immensely to the value of the book. This is especially so to any London student, for all these references are accompanied by the number of the illustrative specimen in the splendid museum of the Royal College of Surgeons. Mr. Flower has lately rearranged the museum specimens with precisely the same object in view. Each bone of the human body has grouped with it typical specimens of the corresponding bone from as many of the lower animals as are accessible. In this manner the entire skeleton can be studied with the greatest possible help from Comparative Anatomy. Mr. Holden has made his book a companion volume to the museum.

Why could not the same be done in this country by the Mütter Museum in Philadelphia, the Museum of Comparative Anatomy in Cambridge, and others?

W. W. K.

QUARTERLY SUMMARY
OF THE
IMPROVEMENTS AND DISCOVERIES
IN THE
MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

Anomalies in the Arterial System.

Dr. J. G. WILTSHIRE reports the case of a negro in whom dissection showed some curious anomalies. The heart was found on the right side, with its base at the proper level, corresponding with the upper borders of the third costal cartilages, with its apex pointing to the right, resting on the diaphragm at a point corresponding with the space between the fifth and sixth ribs. It was normal in size and appearance.

From the left side of the heart the arch of the aorta came off and in every way behaved as it ought to have done, save in giving off its branches. The arteria innominata was wanting, its branches coming off from the arch in the following order:—

The right common carotid arose from the upper face of the transverse part of the arch, where it begins to descend toward the third dorsal vertebra, and then it ascended, in front of the trachea, to the right side of the neck to its usual point of bifurcation into the external and internal carotids; the former gave off no branches until it reached a point opposite the symphysis of the chin, where a short axis was thrown off, from which the facial, lingual, and superior thyroid arteries arose. The latter (internal carotid) presented nothing that was at all irregular in its behaviour.

The left common carotid artery was derived from the outer face of the descending part of the arch, and ascended, upon its old bed, to its usual point of bifurcation, acting as did its fellow on the opposite side.

The left subclavian arose from the descending part of the arch of the aorta, at a point where it crosses, and passed upward and outward to its usual line of passage to the anterior border of the first rib (Wilson).

No more anomalies occurred in the arterial tree until it passed into the abdomen, where the celiac axis came off from the posterior face of the aorta and passed to the right of the latter to its front, where the hepatic, gastric, and splenic arteries were given off. There were two renal arteries on the right side, whereas there was only one on the left.—*Maryland Medical Journal*, Nov. 15, 1881.

Relation of the Peripheral Vaso-Motor Centres to Temperature.

LEWASCHEFF (Pflüger's *Archiv*, vol. xxvi. p. 60) subjects to renewed experimental inquiry the contradictory statements regarding the action of heat and cold on the vessels. According to most observers, the primary effect of cold is constriction, that of warmth dilatation. According to the later observations of Dziedzjul, the reverse is the case, namely, constriction in a medium above 15° Cent. (59° Fahr.), dilatation below 15°. The author experimented upon amputated limbs of dogs, in which an artificial circulation of defibrinated blood was maintained. Nerves and muscles then remained excitable at the end of eight to ten hours, during which period spontaneous contractions were occasionally observed; he judged of the calibre of the vessels by pressure, by rapidity of outflow, and by temperature. He comes to the conclusion that increase of temperature causes dilatation, and diminution of temperature constriction; and that the greater the increase, the greater the dilatation, and the greater the diminution the greater the constriction. These results did not occur with dead limbs, and the changes were, therefore, due to vital activity of the arterial walls. In order to determine the share in the changes of vaso-motor fibres and centres, the author experimented on limbs of which the nerves had been cut a month previously to insure their complete degeneration; the changes were as before. Seeing that Samkovy and Gruenhagen (*Archiv*, 1874, p. 399; and 1879, p. 165) have shown that smooth muscle relaxes with diminution of temperature, and contracts with increase of temperature, the author attributes the above changes to peripheral centres, and not to direct action on the arterial muscle.—*London Med. Record*, April 15, 1882.

Influence of the Nervous System on the Lymphatics.

MM. PAUL BERT and LAFFONT, in a note communicated to the Académie des Sciences, point out that the lymphatic vessels behave, in the presence of physical excitants, exactly as do the bloodvessels. All are agreed in referring the dilatation and contraction of the latter to the influence of the nervous system, but no one has hitherto endeavoured to ascertain whether the lymphatic vessels are under the same influence. The authors have, therefore, made experiments in order to ascertain whether this is the case. The abdomen of an animal during the process of digestion was opened under tepid water, so as to avoid the influence of the air and cold on the abdominal lymphatics. The mesenteric nerves were then stimulated electrically, and on this the lymphatic vessels were observed gradually to shrink and disappear. In another animal the splanchnic nerves were similarly stimulated by a voltaic current so feeble that when applied to the tongue it could scarcely be perceived, and the same vessels were then seen to swell and to become turgescient. If the pneumogastric nerves were divided and the peripheral extremities stimulated, besides the peristaltic movement of the first part of the intestine, there was observed first a transient dilatation, and then a considerable and permanent dilatation of the lymphatic vessels. It seemed important to ascertain whether the same effects could be produced in curarized animals. Claude Bernard showed that the pulsation of the lymphatic hearts of the frog ceases under the influence of curara at the same time as the function of the motor nerves of the muscles is suspended. Experiment shows that the same effect is not produced on the lymphatic vessels. Under normal conditions, when the mesenteric nerves are stimulated the lymphatic vessels contract; but under the influence of curara, stimulation of the mesenteric nerves, or of the splanchnic nerves, causes dilatation of these vessels. It is, however, necessary to ask whether the change in the size of the lymphatic vessels may not be a secondary effect of

the action of the nerves stimulated, upon the blood-pressure in the intestinal vessels. To this an answer is supplied by further experiments, which show that the changes in the lymphatics are entirely independent of the condition of the bloodvessels. The section of the mesenteric nerves which causes turgescence of the bloodvessels does not interfere with the normal course of the chyle, and causes no modification in the size of the chyloferous vessels. Nor has ligature of the arteries any influence on the size of the related lymphatic vessels. Some experiments have also been made on larger animals, the ass and the horse. In these, under the influence of electrical stimulation of the peripheral extremity of the trigemini, the lymphatic vessels of the upper lip were observed to become varicose, and to form a pale prominence beneath the mucous membrane. The investigators have also succeeded in reproducing, in the chyloferous lymphatics and thoracic duct of the dog, the experiments of Gubler on the veins of the hand. A slight tap on the vessel caused a narrowing which passed gradually onwards and was succeeded by dilatation.—*Lancet*, April 29, 1882.

Pancreatic Digestion.

The functions of the pancreatic secretion in the process of digestion have been considerably but by no means exhaustively studied. A fresh series of experiments on the subject has been made by M. DUCLAUX, and described in a paper which he has communicated to the Académie des Sciences. The facts he mentions deserve notice, although they are not altogether novel. A small fragment of the pancreas will liquefy starch, leaving intact only the outer capsule of the starch grain, which is also unaffected by the diastase of germinating barley. This external capsule, if isolated, is not coloured blue by iodine unless treated also with sulphuric acid. It is variable in thickness in different kinds of starch, and seems thus to consist of true cellulose. Except this residue all the starch is dissolved. Duclaux thinks the action is too rapid to be attributed to a ferment. He points out also that the action of the pancreas on albuminoid material is not at present very clearly understood. If one or two milligrammes of pancreas are introduced into ten cubic centimetres of milk, the liquid, at the end of a few hours, is no longer coagulated by acids, even nitric, nor by acidulated ferrocyanide of potassium, and it is, moreover, clear. The pancreas thus plays an important part in the digestion of milk, which may be one of the reasons why milk diet is so useful in diseases of the stomach. In cooked meat, under the same conditions, the muscular fibres are broken up, especially towards the extremities, where they are not protected by the sarcolemma. The interfibrillary substance becomes dissolved, and so the fibrillæ become separated. The difference in action of the gastric juice and pancreatic secretion may be roughly summarized by stating that the former breaks up the fibre transversely and the latter longitudinally. But the effect is not limited to this longitudinal dissociation. The cooked meat is gradually transformed into alimentary pulp, which closely resembles that produced by the gastric juice, but there is never complete solution, although the tissue elements which resist are too small to permit their actual nature to be determined. It is clear, however, that the pancreatic juice has no power than that of the stomach to digest indifferently the various albuminoid bodies. Another fact points to the same conclusion. The fragments of the pancreas themselves remain unchanged even after a very prolonged sojourn in the stove. Contrary to what is sometimes asserted, the pancreas cannot digest itself. When this takes place, it is only through the agency of the organisms of putrefaction. This presents a fresh instance of the law that every living cell consists of elements which are impregnable in its vital conditions to the ferments which it may secrete.—*Ibid.*, April 29, 1882.

The Changes in the Composition of Saliva in Different Diseases.

Dr. SAMUEL FENWICK read a paper at the meeting of the Royal Medical and Chirurgical Society on March 28th, on the presence of bile in the saliva, and on the variations in the amount of sulphocyanide of potassium in the saliva of persons affected with different diseases. The author commenced by stating that it is generally believed that in cases of jaundice the saliva does not contain any of the colouring matter of the bile. He has, however, found a yellow colouring matter in the saliva of every case he has examined, after evaporating it by means of a gentle heat. A bitter taste is often complained of by patients affected with jaundice, and it has been suggested that it might result from the presence of the biliary acids in the saliva. The author has not been able to prove whether this opinion is correct or not, but he details a case in which an intense bitterness was complained of by a person unaffected with jaundice, in whose saliva he found traces of the biliary salts by the ordinary tests. Having proved that both the colouring matter and the salts of the bile occasionally presented themselves in the saliva, an attempt was made to ascertain whether the amount of the sulphocyanide of potassium usually present in the saliva varies in different diseases, and whether such variations coexist with any particular diseases. For this purpose, the saliva was examined in a large number of patients treated in private and hospital practice, and the results were afterwards analyzed. As it had been stated by some physiologists that the sulphocyanide was only the result of decomposition, set up in the saliva by decayed teeth, and by others that it was produced by tobacco-smoking, these two conjectures were first examined. The state of the teeth was carefully remarked in eighty-seven hospital patients, and it was found that there was no relation between the amount of decay in them and the quantity of the sulphocyanide in their saliva. The habits of 213 persons were inquired into respecting their use of tobacco, and it was found that the amount of the sulphocyanide was not affected by the habit of smoking. The quantity of sulphocyanide was almost always deficient in cases of jaundice arising from obstruction; thus, of twenty-three cases, it was very deficient in eighteen, and in some scarcely a trace could be found. From this the author conjectures that the amount of this salt in the saliva depends on the quantity of the bile that reaches the intestines; a conclusion that seemed to be supported by two cases of hepatic fistula, in both of which it was also very deficient. Where jaundice was absent, one of the chief circumstances that appeared to regulate the amount of the sulphocyanide was the quantity of food taken by the patient; thus, it was always deficient in œsophageal stricture, and in cancer of the stomach. Persistent vomiting, diarrhœa, and dysentery produced a similar result, probably by removing the food before it could be fully digested. It was also deficient in cases of severe atonic dyspepsia, and in all cases of chronic disease where the appetite was very bad. The sulphocyanide was found to be in excess in fat persons and in those who were gaining flesh; deficient in those who were thin or rapidly losing weight. It was greatly in excess in all cases of acute rheumatism (thirty-six cases examined), and reached the maximum in the second week of the disease. It was also in excess in all the cases of acute gout, and in most persons liable to what are termed "bilious headaches." In the early stages of all inflammatory disorders there was an excess, for instance, in gastric catarrh, in acute pleurisy, erysipelas, diseased kidneys, and in phthisis, but it sank below the average in the later stages of these diseases. The author points out that the fibrine of the blood has been found to be in excess in most of the above diseases, such as acute rheumatism, gout, erysipelas, and acute inflammations, and he suggests that an unusual amount of sulphocyanide in the saliva is perhaps the consequence of an excessive excretion of unoxidized

sulphur, resulting from the large amount of albuminous material of the blood that has been altered by the inflammatory process, and thereby rendered unfit for organization into healthy tissue.—*Med. Times and Gaz.*, April 15, 1882.

Renal Secretion.

SENATOR (*Verhandl. der Physiol. Gesellsch. zu Berlin*, Jahrg. 1881-2, No. 6) has recently reviewed the various theories which have been put forward during the last few years with respect to the share taken by the various parts of the apparatus in the kidney for separating the different elements of the urinary secretion. His conclusion affirms those views which have found general acceptance in this country. He believes that the blood-pressure determines the rate of secretion from both the Malpighian tufts and the epithelium of the tubules. He regards the process in the Malpighian body as one of simple filtration, and rejects the view that the epithelium covering the tufts acts as a secreting parenchyma. He thinks we must admit that some water is secreted, together with the salts, by the epithelium of the convoluted tubules. A certain amount of albumen may be present accidentally as a transudate through the walls of the Malpighian tuft. He thinks the following factors determine its presence: the conditions, especially the thickness of the membrane, the concentration of the solution (*i. e.*, the blood), its saline contents, its temperature, and the filtration-pressure. The urine, according to Senator, is a mixed solution, the result of, in part, transudation from the bloodvessels, in part of secretion by the glandular epithelium of the kidney.—*London Med. Record*, April 15, 1882.

MATERIA MEDICA AND THERAPEUTICS.

Administration of Belladonna to Children.

Dr. JULES SIMON, in a lecture delivered at the Hôpital des Enfants-Malades (*Gaz. des Hôp.*, January 5 and 10), observes that belladonna is a medicine that is often employed with success in children, who in general bear it very well, just as adults for the most part tolerate it badly. The doses which he recommends are the result of the almost daily use of the drug, either in his hospital or private practice. As examples of its efficacy, he alludes to its use in four cases, one of them occurring as far back as 1871, so that the employment of belladonna is no new thing with him. This case occurred in a boy three years and a half old, the subject of intense whooping-cough, to whom he gave, on March 7, thirty drops of the tincture of belladonna to be taken in the twenty-four hours. On the 8th he ordered forty drops, and next day sixty, always in the same space of time. This last dose was continued daily until the 19th, not only without any accident, but with great improvement in the cough. In two other cases, in boys four and three years old respectively, the dose given varied from fifty to sixty drops in the twenty-four hours; and in a girl thirteen years of age, with bad paroxysms of the cough, beginning with ten drops per diem, he gradually increased the dose to 120, without the slightest accident arising.

The powder and extract of belladonna are two preparations that may be very well associated so as to make very small pills, each containing a centigramme of extract and one of powder; and these pills are found very useful in combating the tendency to constipation in chlorosis. The dose of the tincture may be

graduated as follows: From two to three years of age, five to ten drops; three years, ten to twenty drops; and above three years, thirty to forty drops per diem, always, however, at this last age commencing with ten drops. The dose should in all cases be divided into two portions. Below the age of two the tincture is given only quite exceptionally, and then at a year old in doses of five drops per diem. Of the syrup the daily dose is one or two teaspoonfuls (*i. e.*, five to ten grammes) for a child two years old, and two, three, or even four teaspoonfuls for one of three years. To the adult are generally given two tablespoonfuls, or about thirty grammes. When the neutral sulphate of atropia is employed, half a milligramme per diem should be given to a child two years old, gradually increasing the daily dose to two milligrammes. Belladonna may also be employed externally, as in arthritis and coxalgia, when a liniment may be formed of four parts of extract of belladonna and six of extract of henbane with q. s. of oil of henbane. Sometimes also the extract of belladonna is added to mercurial ointment; and an ointment composed of neutral sulphate of atropia twenty to thirty centigrammes and benzoated lard thirty grammes is very useful in relieving or even removing muscular pains in certain cases. "Belladonna is, then, a very active and in general well-tolerated remedy; and of all the preparations we have referred to, the tincture in medium doses of ten drops for a child two or three years old is the most employed, as also the syrup in doses of one or two teaspoonfuls for a child of the same age. I much prefer these two preparations to the neutral sulphate of atropia."

Turning to its physiological properties and therapeutical indications, belladonna may be described as an irritant substance to the parts upon which it is deposited. Taken internally, it induces thirst, dryness of the throat, with bitterness, and a certain acridity. Sometimes it gives rise to a semi-paralysis of the pharynx, and sometimes even to a kind of dysphagia. In poisonous doses it gives rise to nausea and vomiting, like opium itself. But while the action of this last on the intestinal canal is characterized by constipation, belladonna, on the contrary, produces hypersecretion from the mucous membrane of the canal, and slight painless contractions—that is, diarrhœa. Belladonna has a sedative action on the circulation, producing in a therapeutical dose a diminution of the pulse and calorification; while in a poisonous dose it gives rise to febrile accidents and a notable elevation of temperature. Preparations of belladonna produce on the skin almost a scarlatiniform eruption of uniform redness. Their action on the respiration is to diminish the secretion of the respiratory mucous membrane, the rapidity of respiration, and the play of the thorax, diminishing also the sensibility of the nerves. But when given in large doses, at the same time that these induce vomiting and fever they increase the movements of the thorax. Transpiration is not increased by belladonna, which again in this differs from opium; and it is the same with the urine, which is increased in quantity. It is a nervine *par excellence*, exciting the central nervous system. In a somewhat larger dose it produces cephalalgia; in a stronger dose, vertigo, intoxication, subdelirium, with great loquacity; and in a poisonous dose the delirium becomes more intense, and even furious. Opium is the opposite of this, depressing the nervous system. It acts on the pupil by "decongestion" and dilating it; again the opposite of opium. On this ground it is supposed to render the brain anæmic, while opium seems rather to produce its congestion. Finally, in a therapeutical dose it diminishes the susceptibility of the nerves of sensibility, and in a poisonous dose it gives rise to the phenomena of tetanism. To sum up: the principal action of belladonna is to produce diarrhœa, to diminish calorification, to increase the renal secretion, to maintain the nervous system aroused, while rendering the central nervous system anæmic.

As to the diseases in which belladonna is indicated, Dr. Simon states that in

simple acute laryngitis, in stridulous laryngitis, in intense laryngitis with spasms, raucous cough, etc., he prescribes a mixture of equal parts of the tincture of the roots of aconite and belladonna, giving ten drops per diem to children two or three years of age. In spasmodic and paroxysmal bronchitis, in bronchial adenopathy, in whooping-cough, and in influenza, he also orders belladonna in combination with aconite. If the child is nervous and very excitable, he also associates with the syrup of belladonna (ten grammes) syrup of codein (ten grammes) and eight or ten drops of tincture of aconite, obtaining thus the benefit of both opium and belladonna, their antagonism not being so complete as to prevent their advantageous association in some forms of disease, especially such as are attended with respiratory spasm. Belladonna is also of service in emphysema, in asthma, and in suffocative paroxysms. On the other hand, its employment is absolutely proscribed in pneumonia and broncho-pneumonia. In affections of the digestive organs, especially those met with in nervous little girls, already almost hysterical, with their intellect developed beyond their age, and who are already little actresses, who have anaesthesia of the skin, complain of severe pains without obvious cause, and who suffer from gastralgia, dyspepsia, and sometimes vomiting; in such patients, after trying laudanum, blisters, douches, and ice, he gives belladonna, in spite of the cerebral irritation which exists, in doses of a teaspoonful of equal parts of syrup of belladonna and syrup of codein. When children are growing up and suffer from constipation, which accompanies abdominal neuralgia, he gives before meals a pill consisting of a centigramme of powder and one of extract of belladonna. In tenesmus, ointments combined with belladonna generally succeed, and they are also of use in appropriate cases of nocturnal enuresis. In young girls of thirteen to fifteen, in whom the establishment of menstruation is difficult and is accompanied by erratic pains, a liniment composed of four grammes of the extract of belladonna, six of the extract of henbane, and thirty of the oil of henbane may be applied to the hypogastrium, and then covered with a cataplasm. The pains are by this relieved without the ill effects produced by opium enemata on the menstrual process. Belladonna, formerly much employed in epilepsy, has of late been superseded by the bromides; but in some cases in which these last have been found to fail, advantage has been derived from giving for a fortnight one or two milligrammes of powder of the neutral sulphate of atropia, and following this up for another fortnight with strychnia. In zona and in facial neuralgia of rheumatic origin belladonna may be employed for the relief of the severe pains. In affections of the eye it is of use in diminishing the contraction of the pupil, as also in catarrhal or purulent conjunctivitis, especially when followed up by quinine. It is an error to regard it as a preservative from scarlatina.

“Belladonna, then, is a means which may be very usefully employed in the affections of the respiratory organs already indicated, in diseases of the digestive canal (when neither enteritis nor diarrhoea exists), in affections of the nervous system, in zona, in facial neuralgia, and in diseases of the eye.”—*Med. Times and Gaz.*, March 11, 1882.

Chloroform Water.

In an article in the *Gazette des Hôp.*, March 25, attention is drawn to a highly useful preparation of chloroform for internal use, made by the simple addition of water, and one which will favour the more extended employment of this useful agent. Profs. LASÈGUE and REGNAULD have shown, after due investigation of the subject, that this is the only preparation to be relied upon; and that the solubility of chloroform in water does not exceed 9 per 1000. This solution is

obtained by pouring an excess of this substance into a bottle three parts full of distilled water, shaking the mixture repeatedly, and then allowing the insoluble chloroform to deposit until complete transparency is obtained. The separation of the saturated solution is then made by decantation, or by means of a siphon. This, however, being too strong for internal use, requires dilution with 9 per 1000 of its weight of water. Various salts (as chlorate of potash, borate, bicarbonate and salicylate of soda) may be dissolved in this water without producing any modification; and Profs. Lasègue and Regnaud are of opinion that chloroform-water, either pure or diluted, will meet every need of the internal administration of this substance. Giving a pleasant taste in the mouth, which lasts for a minute or two, it is well calculated to disguise the unpleasant taste of various medicines, as castor oil, etc.; and by the direct action which it exerts on the mucous membranes and other surfaces with which it comes in contact, it may prove useful in certain affections of the mouth, gums, teeth, velum, pharynx. Swallowed, it exerts a stimulant action on the stomach, but it acts differently according as it is taken before, during, or after a meal, and according to the lapse of time that has intervened between taking the meal and the absorption of the chloroform. Given before a repast, in aid of the appetite, the chloroform-water is a bad agent; but given after a meal, whether alone or combined with an alcoholic wine and sweetened, it increases the stimulant properties of the wine or produces the same effects. Wherein this water enjoys an incontestable efficacy, which is proper to it, is when it is administered for combating the multiple affections which supervene during the course of digestion and produce its disturbance. Its maximum therapeutical action is obtainable three or four hours after the meal, when functional disturbances exhibit themselves by yawning, distension, gaseous eructations, a sense of epigastric pressure or heaviness, flushings of the face, and threatenings of vertigo. But in a higher degree still, when the digestive disturbances are manifested by acute lancinating pains of the stomach, oppression, palpitations of the heart, fleeting febrile action, dryness of the mouth, painful tympanites, etc., the action of the chloroform-water is injurious, this period of the indisposition being ill-suited for any stimulant whatever. In a word, the chloroform-water acts on the stomach in the same calming way as upon the interior of the mouth, and if it do not cure the affection, at least it attenuates its consequences. It is the remedy for the crisis, but not dispensing with the requisite principal treatment. It is a remedy eminently suitable as an efficient calmant of the sufferings which ensue from painful digestion in dilatation of the stomach.—*Med. Times and Gazette*, May 6, 1882.

Therapeutic Value of Resorcine and Chinoline.

Dr. BRIEGER (*Deutsch. Med. Zeit.*, Feb. 2, 1882) has carried out experiments on resorcine and chinoline in the clinic of Dr. Frerichs, and gives the results in a paper read on January 30, at the meeting of the Verein für innere Medicin. Resorcine was first recognized as a check to decomposition and fermentative processes and as a powerful antiseptic, by Andeer, and it was believed that there was no external disease in which it did not prove effective. Brieger has, however, got no good result from even a 5 per cent. solution in gonorrhœa. Internally, he tested its antifermentative and antipyretic qualities in typhus and pneumonia, and found that doses of $1\frac{1}{2}$ grammes lowered the temperature somewhat; however, the larger number of the patients thus treated fainted easily, complained of tinnitus aurium, and exhibited startling delirium. In a few patients the pulse became small and soft, the heart's impulse less strong; heavy rigors and perspirations followed, and, lastly, collapse, from which they were with difficulty recovered.

If the dose were pushed beyond 3 grannimes, symptoms analogous to poisoning by carbolic acid were observed; whilst the lowering of temperature only lasted a short time, to be succeeded, in from one and a half to two hours, by increase of fever and temperature, to even a higher degree than before. The nausea was also very objectionable. It might be suggested that, as small doses lowered the temperature for a time, larger doses could be administered to lengthen the effect; but against this is the fact that resorcine is excreted as ether and sulphuric acid, and only a part is further oxidized and forms coloured products of oxidation. Hence, as resorcine is administered, the body becomes poor in sulphuric acid, and receives bodies which act as poisons on it. As an antipyretic, therefore, this drug is not to be recommended on any account. It has also been lauded in intermittent fever; but, as in well-constructed hospitals this fever is observed to pass over favourably without medication, Brieger has not administered resorcine to the patients. He has used the other agent chinoline, without the slightest effect in typhus, pneumonia, rheumatism, and remittent fever; it being in some cases vomited, thereby probably reducing the temperature very slightly. It has also bad effects following its administration, *e. g.*, disturbances of digestion, vomiting, and nausea; so that it does not seem advisable to use chinoline in its present form. Hiller has made similar observations, which were extended to phthisis and enteric fever, with like results, using the tartrate of chinoline, which is very insoluble and of a very disagreeable taste, producing vomiting in three-fourths of all the patients to whom it was given; he has therefore abandoned it. Guttmann used resorcine as a wash for the bladder in chronic cystitis in three patients, in whom it caused intense pains and hæmaturia with renal elements, which at once ceased when salicylic acid solution was used. He trusts that such washings-out with resorcine will never be undertaken again. Brieger, lastly, is astonished that Soltmann recommends it for children with stomacheic ailments.—*London Medical Record*, April 15, 1882.

Detection of Small Amounts of Iodoform and Substances Yielding Iodoform.

On heating an alkaline solution of resorcin with even very small amounts of iodoform a red coloration is produced which again disappears on the addition of an acid. This reaction may be readily employed for the detection of small amounts of substances yielding iodoform, as alcohol, acetone, etc. As is known, such substances are recognized by warming the liquid to be examined, adding a solution of iodine in potassium iodide or potassium carbonate, and then sufficient solution of sodium hydrate, drop by drop, until the brownish-yellow colour is nearly discharged. On agitation and standing, the iodoform separates as a bright yellow crystalline precipitate, which, under the microscope, appears in the form of regular six-sided tables of roundly-pointed laminae. As on the one hand small amounts of iodoform remain dissolved, particularly in alcoholic liquids, and on the other hand the microscopic examination of the precipitate is somewhat circumstantial, it is recommended to gently warm the liquid containing iodoform, obtained by the above method, with the further addition of alkali and a little resorcin. The above-mentioned characteristic red coloration of the liquid then appears.—*Cincinnati Lancet and Clinic*, April 29, 1882, from *Pharm. Centralhalle*.

The Convulsive Properties of Morphia.

The *Gazette Hebdomadaire* contains an interesting note by MM. GRASSET and AMBLARD on the convulsive properties of morphia. Opium contains, as is well known, two series of alkaloids of very different properties, of which thebain and morphia are types. In certain points of view, however, the physiological re-

sults produced by these alkaloids are not entirely dissimilar; for example, it has been found that morphia, as well as thebain, may possess convulsive properties when given to cold-blooded animals. MM. Grasset and Amblard have found an analogous result in the warm-blooded animals; when one or two centigrammes are injected hypodermically, slight transient convulsions are produced before sleep occurs. When larger doses are given, these transient convulsions are succeeded by a generally calm sleep, during which, half an hour or an hour after the injection, isolated contractions occur, which may pass into a form of clonic convulsion, with marked flexion of the body, occurring at each inspiratory movement. These results seem to indicate that the excito-motor effects produced by preparations of opium may not only be due to the convulsive alkaloids, but also to those which are generally regarded as soporific.—*Revue Scientifique*, March 25, 1882.

— *The Effect of Bleeding on Inflammation.*

The effect of local abstraction of blood in relieving local inflammation is one of the ancient doctrines of therapeutics which is still unrefuted and still unexplained. It was formerly held that the result was produced by a perfectly simple *modus operandi*. By the removal of blood from the surface the vessels of the deeper inflamed parts were partly emptied; but it was later recognized that this explanation is incompatible with the known conditions of the circulation. The local removal of blood never produces a lasting effect on the circulation in the part. At the present time it is generally assumed that the effect of local depletion is to remove the inflammatory stasis, although such an effect has never been demonstrated experimentally; and, moreover, the idea of a derivatory action still haunts the theory of the subject, while the effect is sometimes ascribed to the influence of the depletion on the whole mass of blood. The question has been lately subjected to experimental investigation by Genzmer and Nikolas of Halle, and the results obtained have been described by the former in the *Centralblatt für d. Med. Wiss.* In the web of the foot of curarized frogs foci of inflammation were excited by punctiform cauterization, either by nitrate of silver or a red-hot needle, and the process was watched with the microscope. When the well-known phenomena of inflammation made their appearance, the aggregation and exit of the white corpuscles, retardation of the blood-current, and, finally, the formation of stasis, a leech was applied to the leg. As soon as the leech began to suck, a striking change occurred in the inflammatory process in the foot. The blood-current became quickened, and carried on the corpuscles which were adherent to the wall. The stasis passed away, and in a few minutes the inflamed capillaries were cleared, and presented to the end of the experiment a normal and even accelerated circulation. Whether the corpuscles which had already wandered out of the vessels were influenced by the abstraction of blood could not be with certainty determined. In some experiments scarification was employed after the focus of inflammation had been excited. The effect was less conspicuous, since the loss of blood did not occur with the same vehemence as with a leech, although the amount of blood abstracted was nearly the same. The effect of abstraction of blood from the general circulation, by opening an abdominal vein, was still slighter, although the amount of blood taken was considerable. The conclusion drawn from these experiments is that the antiphlogistic action of local abstraction of blood is produced by a purely mechanical agency. A temporary augmentation of the circulation occurs, by which the capillaries are cleared; and the stasis, which is the first step in a local necrosis, is removed. Not only is no local anæmia produced, but there is actually an arterial hyperæmia; there

is an increased supply of arterial blood to the focus of inflammation, which, besides its effect on the bloodvessels, may reasonably be supposed to improve the nutrition of the tissues, and so to counteract the tendencies of inflammation. The antiphlogistic action is clearly proportioned both to the amount of blood withdrawn and to the rapidity of its withdrawal, and its action is notably greater if the blood can be withdrawn from the circulation between the region of the inflammation and the right side of the heart.—*Lancet*, April 15, 1882.

MEDICINE.

The Etiology of Tuberculosis.

The discovery originally made by Villemin, that tuberculosis could be transferred by inoculation to the lower animals, though frequently confirmed, has been as often denied; so that even now, in spite of the positive experiments of Cohnheim and Salomonsen, Baumgarten, Tappeiner, and others, the greatest doubt exists as to whether tuberculosis is actually an infective disease or not. The recent experiments of ROBERT KOCH, however, appear to establish beyond doubt, the truth of the infective nature of this morbid process. After abandoning the old methods of examination, which failed to give any satisfactory proof of the presence of bacteria in tubercle, he succeeded in perfecting a method of staining, by means of which he was able invariably to find a characteristic bacillus in all tubercular tissues.

The tissues are prepared in the ordinary method for similar observations, and either spread on a cover slip and then dried and heated, or the sections of the organ are cut after previous hardening in alcohol; the cover glass or section is then immersed for twenty-four hours, when cold, or one hour when heated to 40° C., in a staining fluid of 1 c.c. of a concentrated alcoholic methylin-blue added to 200 c.c. of distilled water, to which, after repeated shaking, 0.2 c.c. of a 10 per cent. solution of potash is added. The cover glasses or sections are then covered with a concentrated aqueous solution of vesuvium, and after about two minutes washed in distilled water. By this means the blue staining of the tissue is transformed into brown while the bacteria retain their bright-blue colouration, in which, with the exception of the lepra bacillus, they differ from all other bacteria.

The bacteria demonstrated by this process are rod-shaped, and, therefore, belong to the group of bacilli. They are very thin, and about one-fourth or one-half as long as the diameter of a red blood-corpuscle, although they may attain a much greater length. They closely resemble the bacteria of leprosy, but are distinguished from them by being somewhat narrower and more pointed at the ends, besides being incapable of being stained by Weigert's process.

These bacteria are found in all localities where the tubercular process is active, and are arranged in heaps, often in the interior of the cells, as occurs with the lepra bacilli, though numerous free bacteria, especially at the borders of such collections, are also found. When the height of the tubercular process has been reached, the bacilli are then found in smaller numbers and in small groups, associated with faintly coloured and scarcely recognizable bacilli, which have probably died or are then passing into an inactive condition. When giant-cells are found in tuberculous tissues, these bacteria are nearly always to be found in their interior, and when the tubercular process is slow, this is the only locality in which

they are to be found. Dr. Koch succeeded in detecting these bacteria in eleven cases of tuberculosis occurring in man, not only in the tubercular nodules in the lungs, but in the tubercular infiltrations of the spleen, liver, kidney, and pia mater. Twelve cases of pneumonia and bronchitis were also examined, with the result of the detection of the bacilli not only in small groups at the edge of the tubercle, but more abundantly in cavities, where they were associated with other bacterial forms from which they were readily distinguished by their behaviour with vesuvin. They were also found occupying the usual situations, as indicated above, in ten cases of bovine tuberculosis, and in the bodies of three monkeys dying from tuberculosis. A very large number of experiments were made with inoculations of tubercular matter from various sources, and in 172 guinea-pigs, 32 rabbits, and 5 cats, the entire number experimented with on this point, the characteristic bacilli were found in the lungs of the injected animals. His culture experiments, sterilized ox-blood serum being used as the cultivating fluid, furnish the most satisfactory proof as to these bacilli being the causative influence of tuberculosis. Small quantities of tubercular matter were added to this culture fluid and maintained at a temperature of 40° C., the access of other organisms being prevented for ten days, when fine white spots were noticed to form on the surface of the serum, which under the microscope proved to be the developing bacteria. When a small quantity of this infective fluid was injected into the anterior ocular chamber of guinea-pigs, and even cats and dogs, which do not ordinarily become tubercular, general tuberculosis made its appearance in about ten days, and ran a rapid and fatal course.

Several points of contrast were noted between the conditions necessary for the development of these and other bacteria, the most marked being that they require a temperature of from 30° to 40° C., and can, therefore, not develop outside of the body, thus differing from the parasitic cause of splenic fever.

Having thus proved the parasitic nature of tuberculosis, Koch attempts to explain the origin of these bacteria, and the manner in which they enter the organism. As regards the latter point, their great abundance in cavities could readily cause their presence in expired air, which would be thereby contaminated, and serve as a means of conveying the disease to others; they were also found in the sputa of phthisical patients, which, even when dried, retains its virulence, and the power of producing general tuberculosis, when introduced into the circulation.—*Berlin Klin. Woch.*, April 10. 1882.

— *Relapsing Fever.*

An extensive epidemic of relapsing fever prevailed at Königsberg during parts of the years 1879–80, lasting, in all, about fifteen months, and during that time no less than 360 cases were under treatment at the municipal hospital. An account of the chief facts of these cases, which has been published by Dr. MIESCHKE in Virehow's *Archiv*, contains many details of value regarding the clinical history of the disease. A very remarkable feature of the epidemic is the great preponderance of males among those who suffered. Although males usually suffer more than females, the ratio, in ten thousand cases collected by Murchison, was only ten to six, whereas, at Königsberg, the proportion of males was 85 per cent., and of females only 15. This unusual feature was chiefly due to the prevalence of the disease in the low lodging-houses and prisons, and among tramps. As in other epidemics, a large number of the patients (one-half) were from eighteen to thirty years of age, and this special prevalence of the disease at the period of life at which the power of resisting morbid agencies is greatest, shows how much the influence of contagion preponderates over predisposing conditions.

In the month in which the epidemic of relapsing fever reached its height, exanthematic typhus made its appearance, but certain facts observed showed very clearly that there was no direct relation between the two diseases. Two patients were seized with relapsing fever at the end of an attack of typhus, but in four patients typhus developed while they were under treatment for relapsing fever. The cases observed presented very different degrees of intensity and course. Some were so slight that, had it not been for the prevalent epidemic, their nature would scarcely have been suspected; 58 of the cases had only one febrile attack, 120 had two, 107 had three, 7 had four, and 2 had five distinct attacks. The total mortality was near the average, about 7 per cent. Almost all the fatal cases presented grave complications—pneumonia, the symptoms of the so-called “bilious” variety, delirium, etc.; and *post mortem* there were also found meningitis, abscess of brain, pericarditis, fatty-degeneration of the liver, infarction and suppuration in the spleen, tuberculosis of the lungs and intestinal tract. Death occurred most frequently in relapses after the first, very rarely during the first relapse or during the primary attack. The duration of the individual febrile periods was, for the first, six or seven days; for the second, four or five days; for the third, three or four days; for the fourth, one or two days; while the fifth attack did not exceed one day in duration. The first intermission lasted for seven or eight days, the second nine or ten days, the third eleven or twelve days. These periods are rather longer than those noted by other observers.

The highest temperature was usually attained on the last day, or the last day but one, of the first relapse—i. e., immediately before the second remission; the highest temperature observed was 107° in two cases. The greatest pulse frequency was observed at the same period. The greatest fall of temperature at the end of a relapse was from 104.2° to 92.2°, or a fall of twelve degrees. Cutaneous complications were observed in a few cases, erysipelas, lichen, miliaria, herpes, boils, and carbuncles; roseola was observed in cases complicated with exanthematic typhus, but in no case of uncomplicated relapsing fever. Glandular swellings were noted in a few cases only. Diarrhœa was present in nearly half the cases, but was usually a late symptom, the early stage of the disease being marked by constipation, which in a few cases existed throughout. In 8 per cent. of the cases jaundice was present, and pneumonia occurred in nearly the same proportion. Epistaxis was also present, but occurred chiefly at the onset of the disease. Delirium was relatively infrequent, being noted in only 36 cases. Convulsions, opisthotonos, and paralysis of one arm were noted as rare complications on the side of the nervous system. Disease of the middle ear was found in 15 of 180 cases especially examined (8 per cent.), and intraocular affections in 6 cases (or 3½ per cent.).

The spirillæ of relapsing fever were found in almost every case during the attack, and also in the cases of the “bilious” variety, the “bilious typhoid” of German writers. In one of the latter cases they were found, twenty-four hours after death, in large quantities in the blood of the hepatic vein. In several of these cases an enormous enlargement of the spleen was noted, and the follicles were found to be in a state of purulent liquefaction.—*Lancet*, April 15, 1882.

Treatment of Yellow Fever by the Permanganate of Potash.

It is well known that the Mexican government has offered a prize of five hundred thousand francs (cien mil pesos) to the discoverer of a specific for yellow fever, and we learn from the *Chron. Med. Quir. de la Habana*, Feb. 1882, that Dr. ROSADA claims to have found a treatment which, if not specific, at least is successful in saving a large number of cases.

The method presupposes the necessity of oxygenating the large quantities of carbon in the blood produced by the microscopic vegetable organisms which are formed and then decompose in the blood. For this purpose, the oxygenation of the inspired air and the frequent use of baths and injections of permanganate of potash, so as to admit of the absorption by the skin and rectum of oxygen, which is so readily yielded by this substance. It is also recommended the food should be salicylated.

This treatment of Dr. Rosada does not fulfil the conditions required to obtain the prize offered by the Mexican government, since it is directed towards the effect and not the cause of the disease. It seems, however, to deserve serious attention.—*Journ. de Méd. de Paris*, April, 1882.

Symptoms of Trichinosis in Man.

Prof. GERMAIN SÉE describes four forms in which this disease may occur in man: the gastro-intestinal, rheumatoid, œdematous, and typhoid. The gastro-intestinal form is characterized by diarrhœa and vomiting, and, although the symptoms might indicate cholera, the absence of the peculiar rice-water discharges, and, above all, the presence of profuse sweating and great muscular prostration, serve to prevent the diseases being confounded.

In the rheumatoid form, great muscular pain and feebleness are the characteristic symptoms; in later stages other symptoms may arise from the invasion of the muscles of the larynx and chest by the parasite.

The œdematous form is more characteristic. A unilateral œdema of the face, with great prostration, gastro-intestinal trouble, and rheumatic pains, and without albuminuria or heart disease, is almost pathognomonic.

The typhoid form closely resembles typhoid fever, from which it is principally distinguished by the profuse sweats, œdema of the face, and rapid fall of the fever. Nervous symptoms, such as numbness, tingling in the limbs, are generally slightly marked.—*Journ. de Méd. de Paris*, Feb. 25, 1882.

A New Tract of Spinal Degeneration.

Dr. HADDEN, at the meeting of the Pathological Society of London, held April 4th, showed microscopical specimens, taken from a small fragment of the upper cervical region of the cord, which was given to him by Professor Greenfield. The specimen, which had been lying by in spirit for nearly two years at the Brown Institution, was said to have been taken from a patient suffering from locomotor ataxy. Unfortunately he had been unable to get the clinical history of the case. The value of the observation was, therefore, purely pathological. In front of each crossed pyramidal tract—in that part of the cord known as the anterior root-zone, or Flechsig's fundamental region of the lateral columns—is a symmetrical area of degeneration. No other change, either in the gray or white matter, is visible. Although the case was supposed to be one of locomotor ataxy, the posterior columns are quite intact. The degeneration does not appear to be due to overgrowth of the neuroglia, but is apparently granular. Under a moderately high power there are seen at the boundaries of the degenerative area swollen axis-cylinders, together with amyloid bodies. The latter are probably artificial, and depend on the way in which the specimen has been preserved. The morbid area itself seems to consist of a confused mass of granular *débris*. The bloodvessels are thickened, and in some parts contain numerous blood cells. As to the significance of this degeneration, little can be said in the absence of the clinical history. It is almost certain, however, that it is not secondary to a cerebral lesion, for in that case we should expect a unilateral and not a double spinal

lesion. It is impossible to say whether it is a primary spinal lesion, or secondary to disease either of the cord itself or of the peripheral nerves. The lesion is probably ascending, for no trace of degeneration was found in sections made at a higher level than that at which the section shown this evening was taken. In his work on "Diseases of the Spinal Cord," Dr. Gowers figures a degenerative tract which is identical in position with the one just described. In this case the lower end of the cord had been crushed. There was secondary degeneration of the columns of Goll, as well as of the tract just referred to. In the case of Dr. Gowers, sensation was profoundly impaired; and hence he infers that some form of sensation is conducted in this region. As yet, the existence of this tract is supported only by these two observations. In his recent work on "Spinal Localization," Charcot remarks that the region in front of the crossed pyramidal tracts has hitherto not been found the seat of system-degeneration. Dr. Gowers, who has seen the specimens now shown, believes that the degenerative areas are identical in position with those figured and described by himself.

Dr. GOWERS observed that he was not quite certain whether the degeneration was the same as in Dr. Hadden's specimens. The tract, he said, had not exactly the same form in both cases, and it was impossible to say whether they occupied precisely the same region. If they were the same, then Dr. Hadden's case was of great interest, as tracing up the degeneration a little higher than he had himself been able to do. Degeneration of the medulla in this region had not often been observed, but he believed that it was an ascending degeneration, and involved a tract of fibres concerned with the conveyance of sensory impressions. This view was confirmed by some recent observations of Flechsig.—*Med. Times and Gaz.*, April 22, 1882.

Spasms of Muscles of Neck.

Dr. SAMUEL CABOT reports the following case of spasm of the muscles of the neck occurring in a type-setter, aged twenty-nine. His family and personal history exceptionally good. Physique better than the average. April 28, 1878, after six months of uninterrupted work at setting type in an over-heated, low-studded room, by an open window, averaging ten and frequently passing fourteen hours at his post, the patient was seized with muscular twittings of the head and neck, the chin being jerked violently toward the *right* shoulder and oscillating between that point and the median line, where it was impossible to keep it.

Large doses of morphia hypodermically produced temporary relief, but in Jan. 1880, he was seized again, the head this time "veering gently but firmly to the *left* and remaining there persistently." Worked for eight weeks wearing a strap, the symptoms increasing in severity until, at their maximum, the head twitched violently from side to side at the rate of forty oscillation a minute for sixteen hours. Had recourse again to subcutaneous injections of morphia, began to improve about the 1st of May, and the 10th of June resumed work, feeling freer from all symptoms than at any time since the first attack. This immunity, however, was of short duration. In three weeks he was seized suddenly again, and from that time (July 4, 1880) until now he has never been entirely free.

The galvanic current was applied daily to the right sterno-mastoid with slight relief in severity of spasms at the end of six weeks.

Intramuscular injection of the sulphate of atropia in doses of one-sixtieth of a grain, and of curare one-third of a grain, the application of cantharidal collodion and of the tincture of calabar bean to the affected muscles, and ice to the spine, were all tried in turn without effect, except in the case of calabar bean which produced temporary relief for an hour or two after application.

The question of cutting down upon and stretching the spinal accessory nerve at its point of distribution to the affected muscles was entertained, but deemed inadvisable till milder measures should have failed.

At the suggestion of Dr. A. T. Cabot it was resolved to try the effect of fixation in a plaster bandage in the manner described by Delore in the *Gazette Hebdomadaire* for March 22, 1878. The good effect of this apparatus in tonic spasm of the muscles of the neck encouraged the hope that it would be equally efficacious in controlling the clonic spasms of our patient.

The head was accordingly held with the chin pointed somewhat away from the side towards which it tended to be drawn, and the head and shoulders were then enveloped in a plaster bandage.

No inconvenience was experienced from wearing the casque after the first few days. On the contrary, the patient expressed intense relief from the total cessation of the muscular twitchings which were now rendered impossible. This apparatus was worn for eight weeks, the patient resuming his work at long hours without experiencing any return of his trouble.

On removing the casque at the end of eight weeks the muscles were found to have lost their rigidity and to have regained their normal softness. For seven days there was no return of the spasms, and the patient was able to maintain the chin in the median line or turn it to either side without any effort or pain. At the end of a week there appeared slight symptoms of returning trouble, and at his request a second casque of plaster of Paris was applied.—*Bost. Med. and Surg. Journ.*, April 27, 1880.

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Retro-Pharyngeal Goitre.

Dr. O. CHIARI reports in the *Monatsch. f. Ohrenheil.*, No. 11, 1881, two recent cases of this character. After having established the diagnosis with the aid of numerous exploratory punctures, he made up his mind to remove the tumour; the patient, however, died of pyæmia, consecutive to an abscess caused by the punctures before the operation could be performed.

In the second case, that of a young man sixteen years of age, there was a soft tumour situated in the posterior wall of the pharynx, and which showed no improvement under various methods of treatment. It was readily determined that the tumour was connected with the right lobe of the thyroid gland.

In an analogous case, seen four years previously, puncture had been followed by only a few drops of blood. Both lobes of the thyroid were greatly hypertrophied; they continued to do well under iodine treatment alone.—*Rev. Mens. de Laryngol.*, March 1, 1882.

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The Prognostic Value of a Sub-Clavicular Tympanitic Percussion Sound.

From a careful study of the bearing of this physical sign on the prognosis of pleuritic effusions, Dr. J. GRANCHER draws the following conclusions: He believes that more can be learned as to the probable progress of an exudative pleurisy by the study of the apex of the lung than by the portion covered by the effusion. He believes that when a tympanitic percussion note is found in the sub-clavicular region, coincident with an increase of vocal fremitus and respiratory vigour, the upper lobe is in a perfectly healthy condition, and is supplementing by increased action the loss of respiratory surface below. When the tympanitic note is accompanied by increased vocal fremitus but abnormally feeble respiration in the apex, it indicates that the upper lobes are the seat of a congestion, whose nature can only be determined by the subsequent progress of the case. When the tympanitic sound is associated with decreased vocal fremitus and respiration, Dr. Grancher believes that ordinarily it will be found that the bronchi are compressed and the apex œdematous.—*L'Union Méd.*, April 1, 1882.

Treatment of Special Cases of Empyema by Thoracentesis and Simultaneous Injection of Purified Air.

Mr. R. W. PARKER read a paper with this title at the meeting of the Royal Medical and Chirurgical Society on April 25th. The author commenced his paper with the record of a case of empyema in a child aged three years and three-quarters, who had been in the East London Children's Hospital under the care of his colleague, Dr. H. Donkin. The physical signs pointed with great clearness to a very large effusion, but on attempting aspiration only four ounces could be withdrawn. A few days later a further attempt was made, with no better result, although the chest wall was punctured in two or three places. Finally a free incision was made, when between forty and fifty ounces of fluid were got out. The child ultimately recovered with hardly any deformity, although she had an attack of smallpox while the empyema was still discharging. The mechanism of tapping was then referred to. He reminded the Society that it was *vis a tergo* which expelled the fluid rather than a *vis a fronte* which sucked it out. Either the lung re-expanded, or the diaphragm rose, or the chest wall fell in. There were cases, however, in which, owing to rigidity of the chest walls and binding down of the lung, this expulsive force was reduced to a minimum, and additional means became necessary in order to empty the abscess cavity. Dr. Bouehut, of Paris, had published a case similar to his own, and had proposed to forcibly expand the lung through a tube introduced into the bronchus. Instead of this somewhat heroic treatment, it was suggested that filtered and carbolyzed air should be introduced into the pleural cavity in order to displace the fluid. A suitable apparatus for this purpose was shown, and its mode of use demonstrated to the Fellows present. At the completion of the operation it was stated that the air in the empyema cavity ought to be somewhat less dense than the external air, so that the lung might be in a position to re-expand from the first, while the gradual absorption of the air would keep up that advantage during the period of cure. It was contended also that the presence of air in the chest, under such circumstances, by supporting the vessels would tend to hinder the reaccumulation of fluid which a condition of vacuum, as under ordinary circumstances, would rather tend to promote. A case, under the care of Sir Symes Thompson, in which this plan of treatment was successful, was referred to. Instances also were mentioned in which there had been difficulty in withdrawing the fluid, depending on other causes, and particular stress was laid on them, for in such cases the injection of air into the pleural cavity would not suffice to overcome the difficulty. The author especially emphasized that his "plan of treatment is adapted chiefly for those cases in which the difficulty of getting out the fluid depends on rigidity of the wall of the empyema cavity." This condition is most likely to occur in adults, although the case mentioned at the commencement of the paper was a typical one, occurring in a young child. He recommended its trial before "free incision, which is a somewhat severe measure," is adopted.

Dr. SYMES THOMPSON said that in his patient's case, referred to by the author, the result of the plan, especially in freedom from the cough and discomfort, which often compel cessation of aspiration, was very satisfactory. He did not think the double opening necessary, and had recently adopted a device whereby air was admitted through the aspirator canula. The method, as stated, was applicable to cases of chronic effusion with rigid chest walls; but although it might be of service in serous effusion, free openings were probably necessary in purulent collections, because all experience points to the desirability of free drainage in such cases. Mr. Marshall had lately indicated an anterior opening

as the best site for puncture, that being the place selected by nature; but he (Dr. Thompson) thought a lateral position was more favourable for drainage. The ascent of the diaphragm interfered with free drainage in cases of opening in the posterior axillary line. As regards Mr. Parker's plan, the replacement of the fluid by purified air was an advantage; but it was open for discussion whether air or some fluid was the best medium.

Dr. DOUGLAS POWELL thought the idea ingenious, and said the case mentioned was one to which it was particularly adapted. The effusion was of old standing and the lung had been long bound down. In another case, under his own care, at Brompton Hospital, Mr. Hicks had performed an analogous operation. It was one where fluid had to be removed without altering the pressure within the chest, for it was complicated by a diseased and excavated lung; and it was feared that the mere removal of the fluid might induce rupture of the cavity. It was a question whether the replacing of fluid by air was not better done by making a free opening under the carbolic spray. In the first example given in the paper it was difficult to conceive that in a young child sixty-three ounces of pus should be retained in the chest during an attempted aspiration, unless the opening had become closed. He remembered the case of a lady where Mr. Arnott operated. It was a large empyema; and although a long bistoury was plunged up to the hilt, the fluid did not escape. It was quite a recent effusion, and its retention could hardly be explained on Mr. Parker's hypothesis. It was rather due to a loose layer of lymph lining the costal pleura, which may not have been incised and had blocked the opening. This seemed to be the case, since after a plug had been left in the wound a sudden evacuation of pus took place in the night, probably from the lymph becoming softened. The cases suitable for Mr. Parker's method were rare, being limited to those of rigid thorax and bound-down lung. In serous cases it was no advantage to remove all the fluid, the great object being to give rest to the lung, which was not obtained if all the fluid was removed; and it was doubtful whether replacing a pleura partially full of fluid, with carbolized air quite filling the pleura, was a gain. In purulent effusions the best method is to make at once a free incision. He advocated the employment of a manometer attached to the side tube, as giving information as to whether the canula were blocked, and whether the pressure in the chest were positive or negative.

Dr. REGINALD THOMPSON said that the cases related in the paper did not support the value of the author's suggestion. The first case was inapplicable; the crytometric tracing showing clearly that the empyema was pointing in front. In the case in which the plan was adopted only two ounces more fluid were evacuated than at the previous aspiration, and the measure required an additional opening. Nor did he think the third case supported the method.

Dr. COUPLAND considered the plan worthy of adoption in cases of chronic effusion in old subjects; and mentioned a case in point where a hemorrhagic effusion became purulent apparently in consequence of aspiration under these conditions, an issue which probably would not have occurred had pure air been injected to replace the fluid.

Dr. WARNER urged the special advantages of a double incision, as allowing of the free entrance into and exit of air from the pleural cavity. The lung remains at rest, and the process of granulation on the diseased surfaces takes place satisfactorily. In two cases so treated the lung had completely re-expanded. Mr. Parker's method was likely to be useful in some cases, but it did not give rest to the lung.

Mr. F. HICKS had introduced air into the chest on this plan in three cases. The first was one of chronic effusion of six weeks' duration. Three weeks after

operation fluid was still in the chest, and no further operation was necessary in that case. The second was one of acute empyema, in which air was introduced alternately with the extraction of fluid. No marked result ensued, and free incision was made later. The third was that referred to by Dr. Powell, in which air was introduced to prevent too rapid effusion in a case where the lung was much diseased. Air was introduced alternately with removal of the fluid until thirty or forty ounces had been withdrawn. It must be remembered that as soon as air is introduced into the pleura it is impossible to withdraw all the fluid unless the trocar be inserted at the lowest point. For that reason he had supplemented this method by a plan for washing out the sac at the same time and through the same opening. Air is absorbed somewhat rapidly, and in Dr. Powell's case rupture of the lung took place three or four days after the operation, and a fistulous pneumothorax formed. In this case the patient was in a low state, but after the formation of the fistulous pneumothorax an incision was made, and he lived some time after. The cause of failure in aspiration was not pushing the trocar in deeply enough at the first plunge. Mr. Hicks showed his modification of Mr. Parker's apparatus, which combined washing out with fluid and injecting air as well. Cough at the close of the operation was undoubtedly prevented by this method, but it might also be prevented by an elastic bandage round the chest.

The PRESIDENT could not understand how there could be such rigidity of the chest walls in a child as to prevent the outflow of fluid. Moreover, the pressure of the abdominal viscera and the expansion of the other lung would act in expelling the fluid even if the wall itself were rigid. It was assumed that air is absorbed slowly, but surgeons know how rapidly it could be absorbed. Therefore, the injection of fluid was equally safe; and some have suggested to replace the pus by oil. The old surgeons used to inject a decoction of barley. If air were injected the fluid could not be got rid of unless the opening were low, and air could be just as well, if not better, admitted by means of a free opening, which does not exert any force on the lung one way or another. Mr. Parker's plan was applicable to cases of rigid chest wall, but he would put the author on his guard against sources of fallacy.

Mr. PARKER, in reply, said he was aware that the method would be open to discussion and objection. The title of the paper was, "Suggestions for the Treatment of Special Cases of Empyema," and he had referred to cases in the paper in which there were other difficulties than rigid chest walls, for the purpose of showing that he was alive to some of these other difficulties. It was clear that the present methods of treating some cases were insufficient; for since the time when Dr. Symes Thompson had allowed him to operate on one of his cases, this new plan had been tried and elaborated at Brompton Hospital. He had suggested that this plan should be tried previous to free incision, in the hope of being able to avoid that necessity, but was well aware that free incision secured excellent results, though in some cases surgeons were quite unable to close the wound, owing to the non-collapse of the empyema cavity. In some cases of serous effusion the fluid re-collects rapidly; in such it might be preferable to substitute air for the fluid, and the conditions governing absorption would probably not be the same as in the healthy pleura. In the particular case related he had taken every precaution to avoid fallacy; he was possibly influenced by Bouehut's case referred to, and by the fact that a cavity in which the needle could be freely moved not infrequently remained on the cessation of the flow of fluid. If such were the case, there must be more or less of a vacuum—a condition most favourable to reaccumulation of fluid. Mr. Parker demonstrated his apparatus at the close of the meeting.—*Lancet*, April 29, 1882.

Primary Cancer of Lung.

At the meeting of the Pathological Society of London, held April 18, Dr. FENWICK showed a specimen of malignant disease of the right lung; he considered it to be a cancer, but as no sufficient microscopical examination had been made, this question remained doubtful, and was referred to the Morbid Growths Committee for settlement. He referred to the rarity of primary cancer of the lung, and gave some interesting statistics on this point. If the now generally accepted embryological classification of cancer be true, there is no difficulty in accounting for primary cancer in the lung, since epiplastic elements largely contribute to its formation. Undoubted cases of primary cancer have been recorded from time to time; though, compared with some other organs, the lungs are remarkably exempt from this form of disease, despite the varying and almost constant irritations to which they are subject. During the discussion, Mr. Butlin referred to the dissemination of cancer by the inhalation of cancerous particles from a diseased tongue. This view has frequently been advanced, but the grounds for accepting such a method of inoculation or grafting do not appear to us sufficient. It is well known that all attempts to engraft cancer even on animals predisposed to the disease, such as female dogs and cats, have hitherto failed; thus, while it would be premature to deny the possibility of such a mode of infection, it seems somewhat hazardous at present to trace a causal connection between lung and tongue cancer, such as the one just referred to, while there are other and more usual methods of accounting for its spread. Thus, the lymphatics about the tongue are numerous, and are early implicated in disease of this organ. The blood into which the lymph is poured at the root of the neck after passing through the heart next circulates in the lung, and hence it is not difficult to understand the frequency with which these organs are affected with secondary deposits. There are still many interesting points to settle as to the histogenesis of cancer. For while the embryological doctrine of its origin holds good in a large proportion of the cases, yet a growth resembling true cancer is occasionally found in structures which are derived from the middle embryonic layer. Embryologists, it is true, are not agreed as to the exact origin of some organs; they would do well to study these moot points in the light of the pathological degenerations to which such organs (as the ovary and testis for instance) are liable.—*Med. Times and Gaz.*, April 22, 1882.

Artificial Feeding in Phthisis.

At a meeting of the Paris Medical Society (*Gaz. des Hôpitaux*, April 18), Dr. DUJARDIN-BEAUMETZ referred again to this subject, of which we have already given an account in the *MEDICAL NEWS* for Jan. 14, 1882. In his present communication he corroborates all that has been stated by Dr. Debove of the great success which attends the feeding, by means of the œsophageal tube, of patients suffering from phthisis, and who can retain no food. Successful as his own trials of the plans were, Dr. Beaumetz did not find them come up to those obtained by Dr. Debove, and he found, on investigating the reason of this, that that physician did not content himself with giving eggs and raw meat, but had the meat reduced to an impalpable powder, which is very promptly absorbed. Since M. Beaumetz has followed the same plan he has obtained results as satisfactory as those of Dr. Debove, and he has extended this mode of alimentation to hysterical patients suffering from incoercible vomiting. Food thus injected was not vomited, and the same fact has been observed in the wards of Prof. Chareot. At the discussion which ensued, Dr. Debove stated that he had received in his wards the visits of many hospital physicians, who were able to verify for themselves that the

phthisical cases so treated had undergone notable amelioration. The patients had become fatter, and several of them had gained twelve kilogrammes in weight in two months. In most of them the night-sweats had ceased, and the cough had much diminished, so that they seemed to be in a condition approaching recovery. In one case in which death was due to an incidental cause, enormous cavities were found at the autopsy, which were covered with granulations of a healthy nature. To obtain such an extraordinary amelioration it is requisite that these patients should be got to take enormous quantities of nutriment, so as to recover lost ground; and for this purpose they have to be submitted to a kind of training. They will thus take three litres of milk, 600 grammes of raw meat, a dozen eggs, and some powder of lentils. One patient took for sixteen days three litres of milk and twenty-one eggs. In order to insure as complete a digestibility of aliment as possible, the object is to bring the food over a large extent of surface in contact with the digestive juices of the stomach; and with this view milk is the most favourable diet, eggs also, and especially raw eggs, being very useful. The improvement is heralded in especially by the absence of diarrhœa, and by the increase of urea, which in several patients increased from fifteen to twenty grammes to seventy grammes per diem. Dr. Debove chops up the raw meat, and having reduced it to an impalpable powder, introduces as much as 600 grammes at a time by means of the tube, this representing two kilos. of fresh meat—which is truly an enormous dose. But the absence of diarrhœa, the increase of weight, the considerable augmentation of the proportion of urea, and the reduction of fecal matters to their minimum, demonstrates forcibly that this regimen is successful. The meat-powder is, moreover, perfectly digestible. M. Joffroy inquired of M. Beaumetz whether the hysterical subjects he had so successfully treated were only in the first stage of hysterical anorexia, or whether any of them were at the second period, when it had lasted for eighteen months or two years, these being the truly difficult cases in which all treatment usually fails. Dr. Beaumetz replied that in his cases the vomiting had not lasted more than three or four months. In the advanced period we have also to do with inanition, so that patients will die of hunger; but this period must not be waited for before recourse is had to artificial feeding. The curious point is that these patients retain nothing that is taken by the mouth, and do not reject that which is administered by the sound. M. Troisier mentioned the case of an hysterical subject convalescent from typhoid fever, who ceased vomiting after being fed by the tube; and the paroxysms of coughing brought on by the introduction of this did not induce vomiting, although, before, the slightest cough caused it.—*Med. Times and Gaz.*, May 6, 1882.

Syphilitic Disease of the Heart.

In most of the cases of syphilitic heart disease on record, death has occurred suddenly, and the nature of the disease has only been revealed at the necropsy. The following case, therefore, lately reported by Dr. MANNINO in the *Giornale Italiano delle Malattie Veneree e della Pelle*, is of interest, from the fact that the diagnosis was made during life and verified after death. The chief points of the case are briefly as follows:—

A man, aged 36, was admitted into the hospital at Palermo, under the care of Dr. Federici, and stated that he had always had good health, until eight years before, when he contracted some venereal disease, which was followed by pains all over the body. These pains were relieved by iodide of potassium. Since that time, however, he had suffered every winter from an eruption on the lower limbs, and for a few months previous to admission he had had occasional attacks

of dyspnœa. These attacks had become worse during the last few weeks; a troublesome cough also added to his distress; and he gradually became too ill to continue his occupation. On admission, the patient was very weak, and complained of difficulty of breathing. Cough was frequent, sometimes dry, and sometimes attended by expectoration. The belly was swollen; both lower extremities were œdematous, and covered with coppery stains, pustules and scaly patches, some being ulcerated. There was also enlargement of several groups of lymphatic glands. The cheeks, lips, and tip of the nose were blue; the great veins of the neck were prominent and turgid, while arterial pulsation was very weak. The skin of the trunk and neck was mottled, and the radial pulse imperceptible. The hands were cold. The heart's impulse was diffused, and the exact situation of the apex-beat could not be defined. The pulsation was visible also in the epigastrium to the left of the sternal line. The area of cardiac dulness was not increased, the lowest limit being the fifth intercostal space. At the apex, the first sound was obscure, and accompanied by a very weak blowing murmur. At the base and at the second right intercostal space, the *bruit* was somewhat louder, and the second sound weak, but clear; but the *bruit* was much more distinct at the epigastrium than in any other situation. The percussion sound was normal over the anterior part of the chest; but the posterior thoracic parietes were œdematous. Slight mucous *râles* were audible in places; elsewhere, the respiratory murmur was normal. The area of hepatic and splenic dulness was somewhat increased. The urine was scanty, acid, specific gravity 1025, and contained traces of albumen.

From these various symptoms, Dr. Federici diagnosed—first, that the right side of the heart was chiefly at fault, because the *bruit* was more distinct at the base and towards the right than at the apex, and still more distinct in the epigastrium; secondly, that the disease was not in the valves, but in the muscular structure of the heart, because of the rarity of primary disease of the right side of the heart, the normal area of dulness, and the peculiar and very feeble way in which the heart contracted, together with the great increase of tension in the venous system and the emptiness of the arteries. Lastly, he diagnosed syphilitic disease, from the presence of the syphilitic rash, etc. Hypodermic injections of mercury and large doses of iodide of potassium were prescribed. Soon after admission, the attacks of dyspnœa became gradually more and more severe, especially during the night; but the patient slept pretty well in a semi-erect position. The pulse was regular, but never perceptible at the wrist, and even in the larger arteries—the femoral, for example—was very weak indeed. The temperature was usually below normal. The *bruit* became fainter, but was always heard best at the epigastrium. The sputa became bloody, the dyspnœa more and more urgent; and, finally, death occurred somewhat suddenly, after a meal, nine days after the patient's admission into hospital.

Post mortem, the pericardium contained about three ounces of clear serum. The heart was globular in form, and weighed 393 grammes (nearly 14 ounces); the enlargement being due more to the left than to the right ventricle. On the anterior surface of the right ventricle was a large whitish patch of fibrous induration, eight centimetres long and three centimetres wide. On the left ventricle was a similar patch, of the size of a five-franc piece; and other smaller patches were scattered on the surface. A hard fibrous cord, studded with nodules, followed the direction of the interventricular septum. These parts resisted the knife, were pale in colour, and creaked on section. The tricuspid valve was healthy, except a slight swelling on one of the cusps. The endocardium was opaque in patches. The left ventricle was considerably dilated. The mitral valve was healthy. The endocardium of the conus arteriosus was white, indu-

rated, and shining, like cartilage. The muscoli papillares of both ventricles were pale and shrunken. Under the microscope, the affected portions of the muscular substance showed the usual appearances of syphilitic myositis. The lungs were adherent in places, partly emphysematous, and contained numerous infarcts. The liver showed a patch of syphilitic interstitial hepatitis in an early stage. The spleen was rather hard and large, and its capsule opaque, and adherent in parts to the thoracic wall. The kidneys were highly congested. The other organs of the body, as well as the large bloodvessels, were normal.—*Brit. Med. Journal*, April 15, 1882.

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Fistulous Communications between the Gastro-intestinal Canal and the Chest.

Dr. H. TILLMANN reports, in von Langenbeck's *Archiv*, Band xxvii., Heft 1, a case observed by himself and Dr. Neubert of Leipsie, of fistulous communication between the intestinal canal and right pleural cavity. The patient was a lad aged 15, who, on the morning of June 9, 1880, was seized just below his arms by a friend and swung forwards and backwards in sport. After his dinner he vomited twice, and during the following night was taken with acute pain in the right hypochondrium. This pain persisted and increased in severity, and the patient was compelled to lay up. On the ninth day, and after the tenderness in the region of the liver had been slightly relieved, signs of effusion on the right side of the chest were presented. On the fourteenth day, he was suddenly attacked with intense pain over the whole of the right side of the chest, and with increased tenderness in the abdomen. Dulness on percussion was made out over the whole of the right lung, except in the second, third, and fourth intercostal spaces near the sternum, where there was a well-marked tympanitic sound. At the same time the patient suffered much from dyspnoea, and presented symptoms of collapse. He was also very feverish. The space between the fifth and sixth ribs on the right side having been punctured, about a pint of thin greenish purulent fluid, with a decided faecal odour, was withdrawn by aspiration. This exudation was mixed with fluid intestinal contents and with bile. On the sixteenth day, a free opening was made in the wall of the chest, and the purulent cavity was washed out with a solution of salicylic acid and drained. The external opening was covered by antiseptic dressings; and, during a period of four days after the second operation, the right side of the chest was washed out twice daily by a solution of permanganate of potash. Subsequently, and when the strength of the patient had improved, carbolic acid was substituted for the permanganate in the injections. The discharge, which, until the middle of August, occasionally had a faecal odour, and presented minute fragments of food, diminished steadily, save with one relapse after premature removal of the drainage-tube on August 14, and, at the end of the fifth month, had altogether ceased. After an interval of six months from the date of the injury, the patient was quite well.

In his comments on this case, Dr. Tillmanns states that, from what he has been able to make out from a study of the literature of pathological communications between the abdominal and thoracic cavities, the formation of a fistula leading into the chest from any part of the intestinal canal is a very rare occurrence. Communications are much more frequently established between the upper portions of the digestive tract—the œsophagus and stomach, and the thoracic cavity. The best known example of such is a cancerous perforation of the œsophagus involving the pleura. Gastro-thoracic fistula is occasionally formed in cases of ulcer of the stomach, and of diaphragmatic hernia. Of much more frequent occurrence are cases of perforation of the diaphragm, by purulent collections formed in the liver or some other solid abdominal viscus.

The symptoms observed in this case soon after the receipt of injury and the occasional presence in the discharge of half-digested food indicated, in the opinion of Dr. Tillmanns, a rupture of the duodenum near its junction with the jejunum, and the attachment of the band of smooth museular fibres known as Treitz's musele. It is thought that the patient might probably have had ulceration of the duodenum, an affection which often runs a latent course until a sudden termination in fatal perforation. In consequence of this supposed perforation of the duodenum, suppuration, it is thought, had been established, the faecal abscess having been either shut off from the abdominal cavity by inflammatory adhesions, or having, from its origin, been extraperitoneal. The pus might have passed along the yielding connective tissue or along the posterior abdominal wall, and finally have penetrated through the diaphragm, and set up faecal pyo-pneumothorax in the right pleural cavity. Though regarding this as the most probable explanation of his case, Dr. Tillmanns would not altogether reject the theory of its origin in gangrenous diaphragmatic hernia, and in perforation of a small loop of intestine tightly constricted by the margins of a small orifice in the muscle. It is pointed out, however, that this view is opposed by the facts of the spontaneous closing of the fistula soon after thoracotomy, and of the complete recovery of the patient. In considering the probable course of the faecal abscess from the abdominal to the thoracic cavity, Dr. Tillmanns insists on the clinical importance of the interspaces free from museular structure, which have been described by Henle as existing between the costal and vertebral origins of the diaphragm. These interspaces, occupied merely by opposed layers of peritoneum and pleura, are of importance with regard to the condition of diaphragmatic hernia, of subphrenic, hepatic, and renal abscesses invading the chest, and of large hyatid and other tumours in the upper part of the abdomen.

Dr. Tillmanns has collected twenty-two cases of fistulous communication between the chest and the intestinal canal. In fourteen of these cases, the fistula led from some part of the large intestine (vermiform appendix, ascending colon, hepatic flexure of colon, transverse colon), and in the remaining eight cases from the small intestine. In three cases, fistulae leading from the duodenum had opened through the posterior wall of the chest, without having perforated the pleura. The most frequent cause of the fistulous communication, according to these collected cases, is perforating ulcer of intestine (fourteen out of the twenty-two cases). In five cases, the fistula was the result either of traumatic suppuration, or of gangrenous diaphragmatic hernia caused through injury. In one case, the communication between the chest and intestinal canal originated in a pulmonary abscess caused by the presence in a lung of a foreign body. In the cases in which the fistula resulted from perforating ulcer of the intestine, the vermiform appendix was the original seat of the disease in six instances, the hepatic flexure of the colon in two, and the duodenum in five. In three cases the fistula communicated with one lung, and in three other cases it passed between the pleura and the thoracic wall. In every case of perforating intestinal ulcer, the fistula was on the right side of the chest; of the eight cases of faecal fistula that had originated in gastric ulcer, in injury, in action of foreign bodies, or diaphragmatic hernia, in five the fistula was on the left, and in three on the right side.

In some remarks on the treatment of thoracic faecal fistulae, Dr. Tillmanns states, that it is proved by his case, that this condition may be cured by thoracotomy and drainage of the cavity in the chest, and that spontaneous closing of the intestinal perforation may follow evacuation of an intrapleural and probably also of a subphrenic faecal abscess. It is suggested, that resection of the perforated portion of intestine might be justifiably resorted to in cases of faecal abscess with persistent intestinal communication. It is well known that good results have

been attained from antiseptic resection of the affected portion of intestine, in cases of false anus and of gangrenous hernia. Equally valid indications for such treatment might be presented in certain cases of thoracic faecal fistula, and of sub-phrenic faecal abscess. In many cases, also, of perforation of the œsophagus and stomach, cure might possibly be brought about in a similar manner, with or without stitching together of the divided organ, if it were possible to drain effectually the abscess caused by such perforation. Again, in recent cases of perforation at some portion of the gastro-intestinal canal, success might attend very early laparotomy and stitching of the perforated gut or stomach. The result of this treatment in such a condition would depend mainly on the points whether, and if so, to what extent, the contents of the digestive canal had been poured out into the peritoneal sac, and whether the consequent peritonitis were diffused or circumscribed.—*London Med. Rec.*, March 15, 1882.

Vomiting of Urine.

MM. GENERALI and TONINI (*Chron. Med. Quir. de la Habana*, Dec. 1881) report the unique case of a syphilitic woman of 33 years of age, who recovered from an attack of double pneumonia, lasting ten days. This was succeeded by an acute peritonitis with serous effusions. Up to this time the urinary secretion had been normal, but it was now suddenly reduced to 500 grammes, and steadily diminished in quantity until there was complete suppression. The patient then commenced to vomit a fluid which resembled urine in all its physical characteristics, and on micro-chemical analysis it was found to contain all the constituents of the urine: urea, phosphates, chlorides, alkaline and earthy sulphates, carbonate and phosphate of magnesia, and large quantities of pigment. The microscope revealed the presence of epithelial cells of the œsophagus and stomach, and mucus and crystals of the uric acid type, which formed spontaneously by the decomposition of the urate of soda in the presence of the acids of the stomach. As long as the vomiting lasted, not a drop of urine was to be found in the bladder. In about a month the patient was completely cured.—*Journ. de Méd. de Paris*, Feb. 4, 1882.

An Obscure Case of Duodenal Ulcer.

Dr. E. B. GRAY reports the following case: J. J., aged fifty-eight, a retired college servant, between 5 and 6 P. M. on Sept. 24th suddenly vomited a large quantity of blood. On my arrival about a quarter of an hour afterwards, I found he had brought up by measure over twenty ounces of bright red blood. He was ordered twenty minims of tincture of perchloride of iron every three hours, to keep to ice and iced water, and to remain absolutely at rest on his back.

He was a very well-nourished man, and of healthy appearance. I could find no evidence of disease of heart, liver, or kidneys. The appetite was normal; epigastrium only slightly tender to pressure. The only history was that for two years previously he had had pain "across the pit of the stomach and through to the loins," seldom absent for many days at a time, and for the last month or so getting worse, but never accompanied by vomiting. He was very doubtful whether it had been at all influenced by what he ate. He had never passed blood by the bowel; he had not been losing flesh. No further hemorrhage occurred that day, and at 10 P. M. he seemed very comfortable. Soon after midnight the bowels became uneasy, and in the course of the next four hours he passed by the bowel between a pint and a half and two pints of dark clotted blood.

Sept. 25. Very blanched and prostrate, but no further loss of blood. Slept
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much during the day, swallowing nothing but ice, iced beef-tea, and the perchloride of iron.

26th. Remained undisturbed until 3 A. M., when he was seized with violent epigastric pain, fainted, and died in a few minutes.

At the post-mortem examination the stomach and intestines were found full of blood. The sole lesion discoverable was a small deep ulcer, of the diameter of a split pea, clean-punched out of the otherwise healthy mucous membrane of the duodenum. At the bottom of the ulcer was a small perforation in the pancreatico-duodenal artery. The other abdominal organs were healthy. The chest could not be examined.

This case illustrates well the occasional extreme difficulty of diagnosing duodenal ulcer. Chronic complaints of pain at the pit of his stomach, with scarce any tenderness, along with ability to take food and maintenance of his bodily nutrition and appearance of health, had gained for this unfortunate man the reputation of a confirmed hypochondriac, and at one time of a malingerer. But duodenal ulcer may run a fatal course with even greater latency of symptoms than occurred in this case. In the *Transactions of the Pathological Society*, vol. ix., the late Dr. Murchison records a case of a finely developed man who died suddenly of peritonitis from a perforated ulcer of the duodenum, and who up to the time of his fatal attack had enjoyed excellent health, and never suffered from vomiting or any pain whatever after food or at other times.—*Lancet*, May 13, 1882.

— *Localization of Intestinal Catarrh.*

Inflammation of the mucous membrane of the bowel—intestinal catarrh, as it is now customary to term it, irrespective of its cause—may be of very limited distribution. It is true that this statement has been contested by some authorities, notably by WOODWARD, on the ground that specimens of such localized affection are rarely to be found in pathological collections. But inflammation of less severity is naturally of less extent than that which brings its subject to the post-mortem table, and the frequent clinical evidence of localized enteritis is fully confirmed by the systematic examination of the bowel in cases in which the intestinal affection merely complicates other diseases. Our knowledge of the variations in symptoms which attend these changes in locality is, however, still vague and scanty. By the occurrence of jaundice we recognize that the duodenum suffers; tenesmus points to the rectum; while by the position of pain and tenderness we may often guess with more or less accuracy at the part of the intestine which is chiefly diseased, but we know little or nothing of the influence of locality on other symptoms which attend inflammation of the bowel. To supply facts to bridge over this lacuna in medical science has been the object of some observations, continued with characteristic industry for a considerable time, by Professor NOTHNAGEL, of Jena, in which symptoms and pathological appearances were most carefully compared, and the extent of which may be judged from the fact that a microscopical examination was made of more than one thousand evacuations. The results have been published in the *Zeitschrift für Klin. Medicin*.

The first question which he has studied is the indication to be drawn from the character of the stools. The significance of the passage of pure mucus, as indicative of an affection of the sigmoid flexure, is well established. Scybala imbedded in mucus may, it is currently said, be due to an affection of any part of the colon, but Nothnagel asserts that this condition of stool is only met with when this disease is below the splenic flexure, and it is certainly indicative of a catarrhal condition. The same conclusion cannot, however, be drawn from the passage of large well-formed stools surrounded by a layer of mucus. The latter indicates a condi-

tion in which catarrh may easily arise, but not an actual inflammation. The absence of mucus does not exclude the absence of catarrh of the lowest part of the bowel, as several well-authenticated cases show. Mucus may, moreover, be passed in abundance, when ordinary examination of stools does not suggest its presence. In this state the stools are soft (not liquid) and apparently uniform, but a thin layer, between plates of glass, presents, under the microscope, numerous clear islets of pure mucus. This condition is of considerable importance in regard to localization, and indicates catarrh of the small intestine, with or without implication of the ascending portion of the colon. With such evacuations the lower half of the colon is always healthy. If the latter is affected, the mucus is found not only in the substance of the feces, but also on their surface. In some cases of catarrh of the whole of the large intestine, the stools are of a pulpy, almost fluid consistence, and contain small globules of mucus, but these are so large as to be visible to the naked eye. The microscopic globules come only from the small intestines. On the other hand, the former cases are distinguished from catarrh limited to the lowest part of the colon by the intimate mixture of the mucus and fecal matter. Of course, this conclusion does not hold good for the cases of severe dysenteric inflammation of the whole colon, in which pure mucopus is evacuated, or in which, in consequence of the damage to the membrane, mucus is no longer secreted. There is yet another form in which mucus is passed which is of diagnostic significance—globules of mucus coloured yellow by bile pigment. These are never found in catarrh which is limited to the colon; the small intestine is usually, and often chiefly, involved. The appearance is not infrequent in typhoid fever.

Another constituent of the feces which is of diagnostic importance is bile pigment. It is well known that under normal conditions the contents of the bowel cease to react, in a characteristic manner, to Gmelin's test, at or about the ileo-caecal valve. The play of colours no longer commences with a conspicuous green. A characteristic reaction in the feces, or at least in certain of their constituents, indicates that there is an augmented peristalsis of the colon and lower part of the ileum. Nothnagel has never been able to obtain this reaction in the general mass of a consistent stool. If unaltered bile pigment is present, the consistence of the feces is always more or less liquid. A retention in the colon sufficiently long to give firmness is always attended with a transformation of the pigment. It is rare, under any circumstances, for the reaction to be obtained from the whole of the fecal mass, except in acute infantile enteritis. Much more frequently the unaltered bile pigment is found only in portions which contain much mucus. Sometimes the same evacuation contains both clear and yellow-stained mucus, the latter giving the bile reaction and coming from the small intestine, the former from the colon. The presence of the former was invariably found, post mortem, to be associated with catarrh of the jejunum and ileum. It implies an increased peristaltic action, which must, however, involve not only the small intestine, but also the colon throughout its entire length. If the greater part of the large intestine is healthy and the stools infrequent, no unaltered bile pigment may be passed, in spite of the existence of catarrh in the lower bowel. Micro-chemical investigation often shows that not only mucus but cylindrical epithelium contains unaltered bile pigment. The diagnostic significance of this epithelium is the same as that of the bile-stained mucus. The staining of the epithelium may be proved, post mortem, to occur in the small intestine, but only after detachment from the mucous membrane, since that which is still *in situ* is always colourless. Rarely, leucocyte-like corpuscles and fat globules, stained with unchanged bile pigment, may be found in the stools, and have the same significance as the epithelium.

The presence of unaltered fragments of food in the feces constitutes another

element of diagnostic significance, since their quantity indicates normal variations in different parts of the intestinal canal, being far greater in the small than in the large bowel. Fragments of muscular fibre are invariably present under normal conditions, and hence only a considerable excess can be regarded as pathological. The significance of this constituent relates only to the small intestine, for the colon has no influence on its presence. Whatever passes the ilco-cæcal valve is ejected without further change. A series of careful observations has shown that the digestion of muscular fibres is greatly hindered by pyrexia; that, in the presence of fever, an excess in the stools affords no diagnostic indication. Mere increased peristalsis, without fever or catarrh, is also capable of causing the excess; and if the motion of the contents of the intestine is not accelerated, intestinal catarrh does not increase the amount evacuated, and an excess therefore only points to such catarrh when other indications of this, such as mucus, are present at the same time. An excess of starch granules has a similar significance. Intestinal catarrh seems also to be without material influence on the amount of fat in the feces. The anatomical changes induced in the mucous membrane are absolutely without influence on the absorption of fat.

The conclusion of most previous writers, that physical examination of the abdomen furnishes but scanty indications for the localization of enteric catarrh, is confirmed by Nothnagel. An extensive series of auscultatory observations were made, the relative loudness of gurgling sounds in different parts of the abdomen being noted simultaneously by two observers, but the ready conduction of the sounds from one part of the abdomen to the other made definite localization impossible. Only when the noise was produced in the ascending or descending colon, and the small intestine contained liquid, was it inaudible on the other side. Nor does percussion teach much regarding the localization of intestinal catarrh, since the condition which usually obtains—less resonance in the central part of the abdomen than in the position of the colon—is also present in normal conditions. Even the alteration in the normal relative resonance of the two iliac fossæ, so frequent, as Traube showed, in typhoid fever, is produced by many conditions, and is of little diagnostic value. The study of the indication afforded by palpation confirms, but does not extend, the well-known significance of local tenderness and of local gurgling perceptible to the touch.

The last diagnostic point investigated by Nothnagel is the excretion of indican by the urine, which, as is well known, is increased in a remarkable manner in many affections of the gastro-intestinal canal. Unfortunately the extensive observations, including two thousand separate estimations of indican in the urine, of cases which were carefully watched, have yielded but little result. An increase was found in the majority of cases of intestinal catarrh and diarrhœa, and very often also in cases in which there was no intestinal affection at all. When the colon only was affected, however, no excess of indican was observed so long as the general condition of the patient was good. On the other hand, in all cases in which there was a decided catarrh of the small intestine, the indican was increased. So constantly was this found that Nothnagel was inclined to believe that the absence of an excess of indican gives ground for excluding catarrh of the small intestine, but his conclusion was rendered doubtful by a series of cases of exanthematic typhus, with severe intestinal catarrh, in which no indican was found in the urine. It may be doubted whether his previous conclusion is altogether invalidated by this fact; it may still hold good for the simpler forms of enteritis.

These laborious investigations, in a department of practical medicine often passed over as alike unpromising and uninviting, deserve the highest praise. They add materially to our knowledge of enteric symptomatology, and they show

how important are the facts which may be ascertained by a systematic study of the night-stool, and which has been too little regarded by the present generation of clinical observers.—*Lancet*, March 4, 1882.

Jaundice in the Newly-born.

The mysterious jaundice which so often affects newly-born children has always given rise to much interest and many hypotheses, based for the most part on fancy rather than on fact. By some authorities its cause is referred to the liver, by others to the blood. Modern theories of jaundice render the former explanation the more probable, since the opinion that the elements of the bile are pre-formed in the blood has been practically given up, and with it falls to the ground the theory of "jaundice by suppression." Virchow believed that icterus neonatorum was merely a variety of the common catarrhal jaundice, and arose from duodenal catarrh, while Cohnheim has assumed that the bile formation of fetal life is small, and is so suddenly increased at birth that the bile-ducts are not at first competent to carry the secretion away. Neither of these assumptions rests on any evidence. Another group of theories ascribes the jaundice to the disturbance of the circulation in the liver which occurs at the change from intra-uterine to separate life. Hewitt and Weber believe that the distended veins compress the bile-ducts, while Frerichs has adopted an older theory of Morgagni, and suggests that the sudden diminution in the supply of blood to the organ leads to a passage of the secreted bile into the bloodvessels. The theory of Breschet, that the jaundice depends on changes in the colouring matter of the blood, and is thus hæmatogenic in nature, has been recently revived by Epstein, but it rests on considerations which are, with one exception presently to be mentioned, even more purely hypothetical, and its chief support is the feeble argument that other causes have not yet been demonstrated.

This lacuna in our knowledge of the subject is to some extent filled up by facts which BIRCH-HIRSCHFELD, of Dresden, has supplied in an article contained in a recent number of Virchow's *Archiv*. It is, he points out, very difficult to avoid associating the jaundice in some way with the disturbance of the hepatic circulation on the transfer of its chief blood-supply from the umbilical vein, especially when regard is had to the conspicuous congestion and œdema of the liver, well described by Weber, which occur in cases in which the circulation through the umbilical cord is interrupted before the respiratory movements, by their effect on the right heart, afford an adequate compensation. It is to the connecting link between the two phenomena that Birch-Hirschfeld's attention has been specially directed. He notes that the vessels in the hilus of the liver are surrounded by a dense layer of connective-tissue, which is continued into the organ along the branches of the portal vein, and that in cases in which there is venous obstruction in the liver, in consequence of hindered birth, this tissue is the seat of conspicuous œdema. A broad layer of gray pulpy tissue incloses the vessels, and is seen also around the umbilical vein in its diaphragmatic portion, and may also extend to the gall-bladder. The microscopical appearances of this tissue are those of œdema with a more or less abundant accumulation of round cells in the interstices of the tissue. That this swelling of the tissue must compress the bile-ducts is sufficiently obvious; and Birch-Hirschfeld has found that not only, under these circumstances, are the bile-ducts distended, but there may be a positive difficulty in squeezing the bile out of the gall-bladder into the duodenum, and in the latter there is a manifest deficiency of bile. In such cases, in which death occurs during the first day of life, commencing icterus may be distinctly detected; and the gradual increase of the jaundice in connection with this pathological con-

dition may be observed in patients in whom life continues longer, as cases reported by Birch-Hirschfeld demonstrate.

A difficulty, however, in accepting this theory is presented by the fact, which has been relied on by the advocates of the hæmatogenic origin of the jaundice, that the presence of bile-pigment can rarely be demonstrated in the urine. The cause for this is not very clear. Its significance is, however, lessened, if not removed, by an important fact ascertained by Birch-Hirschfeld—that in fatal cases of this infantile jaundice the presence of bile acids may always be demonstrated in the pericardial fluid, whereas they cannot be found in other children who do not present jaundice. This may be taken as proof that the colour depends on the presence of bile in the blood, and not on any mere destruction of blood-corpuscles and transformation of the blood-pigment; it may also be regarded as proof of the hepatogenic origin of the jaundice. By the definite theory of Birch-Hirschfeld all the characters, peculiarities, and date of this form of jaundice may be perfectly explained.

In very rare cases, however, jaundice of much graver type occurs in newly-born children. One cause of this is a congenital atresia of the bile-ducts; more frequently it is due to the compression of the ducts by syphilitic inflammation and growth—the syphilitic peripylephlebitis of Schuppel. Another form, which is extremely grave, seems to be developed by an infective process. The *materies morbi* enters by the navel wound, and is perhaps the same as causes puerperal fever in the mother, conveyed, it may be, by bacteria, since two forms of micro-organisms may be found in the blood of infants in this condition—spherical and small rod-shaped bacteria,—the latter probably identical with those proved by Koch to be associated with the septicæmia of the mouse. Further investigations are necessary to ascertain whether these correspond to two different forms of infection. Birch-Hirschfeld's observations, however, tend to show that the rod-shaped bacteria occur especially in the form in which the disease develops rapidly, as a virulent general infection, with a strong disposition to hemorrhage.

In these cases an arteritis umbilicalis has generally been found, and the conclusion has been drawn that this vessel is the channel of infection. Of sixty cases, phlebitis umbilicalis was found in eleven, simple thrombus in the vein in four, arteritis alone in thirty-two cases, and inflammation of both vessels in three. Nevertheless, even when the artery alone is conspicuously diseased, the liver as a rule shows intense alterations, inflammatory changes in the periportal and inter-acinose tissue, and acute degeneration of the liver-cells, which constitute strong reason for believing that the infection reaches the liver by the umbilical vein. After birth the varying pressure on the liver vessels, due to the cardiac and respiratory movements, causes an alternate emptying and filling of the remnant of the umbilical vein whenever the contraction of the artery arrests the circulation within it. Hence the conditions are most favourable in the artery for the local development of the morbid process, but in the vein for the systemic infection, and the movement of the blood in the latter may explain why the local changes in it are less intense. Birch-Hirschfeld describes three cases in which there was a central phlebitis of the umbilical vein and a pylephlebitis had developed at the opening of the umbilical into the portal vein, whereas the whole lower end of the former was free—a condition which can only be explained by assuming that the movement of blood in the vein carried the infectious material forwards, so that its action was exerted chiefly on the portal vessels. This condition may easily escape notice in an ordinary examination. No relation is to be traced between the intensity of the vascular change and the degree of the jaundice which is so constantly associated with this infection, but the former is always intense when the changes in the substance of the liver are well marked;

thus it seems likely that this jaundice also is of hepatogenic origin, and it is probably due, like the benign form, to the swelling of the periportal connective-tissue compressing the bile-ducts within the liver itself. We can thus understand that the degree of jaundice should lessen towards the close in cases of severe general infection. The conditions which favour the occurrence of the benign form of jaundice, premature birth, weak breathing, etc., also favour the development of the malignant variety if there exist any cause of septic infection.—*Lancet*, March 25, 1882.

A Case of Chyluria treated with Benzoic Acid.

Dr. G. C. ROY reports the following case: A Mahometan female, aged twenty-four years, mother of two children, the last one being fourteen months old, applied to the Sooree Charitable Dispensary for treatment on the 29th of January, 1882, for milky urine. She noticed twenty days before that the urine on voiding coagulated into a jelly-like mass. This used to take place at night, but in the day it used to be clear and transparent. At times it would coagulate in the bladder and cause difficulty in micturition. She had a pale, emaciated look, and was subject to intermittent fever. Her appetite was craving; bowels regular. Beyond a feeling of uneasiness in the loins, she had no pain to complain of. There was no history of syphilis.

The urine brought for examination was passed at night. It had a turbid look, and had coagulated into a uniform jelly with slight tinge of red from the admixture of blood, and was here and there dotted with small red coagula. On microscopic examination there were found red blood-corpuscles crenated and shrivelled and crystals of triple phosphate entangled in a fibrillated mass. There was no filaria, but one broken specimen the identity of which was doubtful.

Ordered. Benzoic acid, grs. x t. d.

January 31. After taking nine doses of medicine, the character of the urine entirely changed. It was clear, of pale straw colour, and natural.

February 2. To-day the urine was somewhat red from admixture of blood, but there was no tendency to coagulation.

Continue medicine.

4th. The urine more bloody. The morning specimen was still of a paler colour, with slight sediment. In fact, the urine had more the appearance of hæmaturia than chyluria.

Omit benzoic acid. Tr. ferri muriat. ℥xx; inf. calumbæ, ʒj t. d.

7th. No change for the better. The urine was of rosy hue, and this morning had coagulated into a jelly as before.

No hæmatozoa detected under microscope.

Add benzoic acid, gr. x, to the tr. ferri muriat. mixture t. d.

8th. The coagulation has stopped, and the colour is paler than before.

12th. The urine quite clear and normal.

13th. The patient had an attack of fever, but the character of the urine remained unchanged.

20th. The improvement is stationary, and up to date (1st March) there has been no recurrence of symptoms.—*Indian Med. Gazette*, April 1, 1882.

Multiple Fibromata of the Skin.

Prof. von RECKLINGHAUSEN, of Strasburg, whose essay "On the Lymphatic Vessels and their Relation to the Connective-Tissue," 1862, has sufficed almost of itself to keep the author's name fresh in professional esteem, now comes for-

ward with another contribution to scientific medical literature.¹ The occasion of its publication is the twenty-fifth anniversary of the founding of the Pathological Institute, by Virchow, at Berlin, and the work bears on the title-page that it is a "Festschrift" offered to that illustrious teacher and leader of men.

The primary subject of the essay was a case of multiple fibromata of the skin in a woman, aged 55, who was brought to the Strasburg Hospital in January, 1879, and died, a few hours after admission, of bleeding from the lungs. The occasion was used to make a thorough examination of the external tumours, of certain coexisting tumours (neuromata) on the course of some of the nerves (lower extremity chiefly), as well as of a very obscure condition of the internal organs and their serous coverings. Subsequently the author had the opportunity of observing another case of multiple fibromata of the skin during life. Photographs are given of both cases. Besides the discussion of those two cases, the essay contains an elaborate *résumé* of all the available recorded cases of multiple fibromata and multiple neuromata, which will save the time of all subsequent inquirers into the subject. Cases of multiple morbid products in the body used to be the favourite opportunities of demonstrating the existence of a dyscrasia or diathesis or morbid state of the blood. When the structural complexity of the tissues came to be recognized, that general point of view was gradually abandoned, and attention was concentrated on histological analysis. When all the details are mastered, there can be hardly any doubt that we shall come back to the generalizing standpoint which had for a time to be given up. But Professor von Recklinghausen's judgment upon his first case will show how far off we still are from the simple generalizations of pre-microscopic times. The skin of the whole trunk, head, and limbs of the body examined was covered with soft, fibrous tumours (*fibro-molluscum*); there were fibrous thickenings (so-called neuromata) in the course of several of the nerves (branches of the sacral plexus, of the anterior crural, several intercostals, frontal, and supraorbital); there were fibrous nodules in both breasts. Leaving the external parts, there was some clear fluid in the abdomen, with adhesions in various parts; numerous small nodules on the serous coat of the stomach, mostly of miliary size and somewhat transparent; small outgrowths on the capsule of the liver, not amounting to circumscribed nodules like those of the stomach; on the surface of the diaphragm, right side, soft villous-like outgrowths; several large nodules, stalked or sessile, on the serous surface of the small intestine, two of them being of hemorrhagic appearance and sarcomatous structure; on the surface of the left kidney numerous white patches with translucent miliary nodules in them, and a few whitish nodules in the substance of the papillæ; in the liver a few small red spots with white centres; in the mucous membrane of the jejunum, several small nodules with one small ulcer; small ulcerations in Peyer's patches, with here and there a small nodule, not caseous, in the submucosa; in the lower part of the ilium the ulcers had become confluent and had thickened edges; a few follicular ulcers in the colon. Coming next to the thorax, the pericardial surfaces were united by adhesions, in the midst of which lay nodules, but these were "not undoubted fibromata;" small excrescences on the mitral valve; on the posterior wall of the trachea numerous miliary nodules (one as large as a pea), translucent, tough, sessile, with vascular surroundings; in both lungs numerous small centres of induration, partly in the form of miliary nodules, smooth-walled vomicae in the right lung, and in the left a few circumscribed gray hepatizations of unusual dry-

¹ "Ueber die multiplen Fibrome der Haut, und ihre Beziehung zu den multiplen Neuromen." Von F. von Recklinghausen, Professor in Strasburg. Berlin, 1882. pp. 138. Five plates.

ness. Lastly, two or three soft tumours were seated on the periosteum of each tibia in front.

What, then, does Professor von Recklinghausen make of this extraordinary case, the *post-mortem* record of which he has drawn up with so much fidelity and completeness? He takes the fibromata of the skin as his point of departure; these were formations chiefly of the lower layers of the cutis vera (involving sweat-glands and hair-follicles in various ways), and they sometimes sent prolongations downwards, into which nerve-fibres could be traced. The latter circumstance was a link connecting the multiple fibromata of the skin with the coexisting fibrous thickenings on several of the surface-nerves of the lower extremity, thorax, and forehead; these are called neuromata, although the nerve-fibres are, generally speaking, passive and merely inclosed in the fibrous growth, as in the so-called ganglia which form on certain peripheral nerves where they are exposed to pressure. Both kinds of new formation are, therefore, grouped under the common name of neuro-fibroma. Further, the neuro-fibroma explanation is extended to the new formations in the interior of the body, or rather to a select few of them. Encouraged by a previous observation made by Sangalli, who also found multiple fibromata of the skin to coexist with numerous similar nodules of various sizes on the surface of the stomach, the author sought to trace a connection between the latter and the nerves of the gastric plexus. The nodules on the external surface of the stomach and intestine showed, to the naked eye, characters which distinguished them from the new formations of such diseases as tuberculosis and lymphoma; some of them were too large (cherry or walnut size); the miliary ones were too hard, and were isolated in the muscular coats, whereas tubercles are apt to become confluent on the serosa. Under the microscope they were composed of the same connective-tissue as the cutaneous tumours, fibrous, but scarcely at all fibrillar, and with a few small spindle-cells. Lastly, they were not subject to caseous degeneration. But were they in reality connected with branches of the gastric plexus of nerves? Only in the case of one small nodule on the stomach did Professor von Recklinghausen succeed in following a nerve-fibre into the midst of it; the task was accomplished more easily—and a figure is given among the illustrations—for a fibrous nodule of the mesentery. To eke out this somewhat scanty evidence, he adduces the fact that in the teased preparations from two of the stomach nodules there were found in the midst of the fibromatous tissue a number of large polygonal cells, whose protoplasm was finely granular and without fatty molecules, and whose nucleus was invisible. They were not, therefore, young giant-cells, but more probably atrophied ganglion-cells of the plexus myogastricus. The nodules in the trachea contained true giant-cells, as well as round cells; they had also a “degenerated centre,” and they were real tubercles, and not miliary fibromata; so that the absence of nerves in them was the less surprising. The periosteal nodules of the tibia showed nerve-fibres in the sections, but the new growth, which appears to have been more sarcomatous than fibromatous, was not laminated around them. Again, the larger tumours of the serous membrane of the jejunum were also of the sarcomatous kind, and highly vascular, while they had no obvious relation to nerves, not even an accidental one. Lastly, it was not possible to trace any connection between the multiple fibromata of the breasts and the nerves of those organs; nerves were not even seen in the sections.

Thus far, in the negative direction and in the positive, does Professor von Recklinghausen carry his analysis: to the multiple fibromata of the skin he adds the fibrous thickenings on the external nerves, and he combines both under the name of neuro-fibroma. To these neuro-fibromata of the external surface of the body he inclines to add a few at least of the serous-membrane formations, as

nenro-fibromata of the sympathetic. There were, it is true, formations also on the pericardium, on the diaphragm, on the liver, on the kidney, in the trachea, in the lungs, in the liver substance, in the kidney substance, in the mucosa of the intestines, and in the breasts. There were also sarcomatous tumours of the surface of the jejunum, and of the tibial periosteum. What is to be made of all these curious manifestations of disturbed health, does not appear. Professor von Recklinghausen seems to regard them as the ninety-and-nine things that need no explanation. He has been arrested by the coexistence of multiple fibromata of the skin with fibrous thickenings on the course of some of the cutaneous nerves (chiefly at exposed stations), and he has been led into a theory of fibro-neuroma, which does not appear to contain within it any fruitful pathological idea, and which carries him only a little way over the case as a whole. Nothing shows more clearly than this bewildering eclecticism how distant that time is when we shall again be using the simple generalizations, the empirical but still philosophical language of diathesis or dyscrasia, which distinguished the pre-microscopic age.—*Med. Times and Gaz.*, April 15, 1882.

Leprosy.

The following conclusions with regard to the bacterial nature of this disease are given by Dr. ALBERT NEISSER (*Virchow's Archiv*, Bd. 84, No. 3):—

1. Leprosy is a true bacterial disease caused by a special variety of bacteria.
2. These bacteria enter the organism as such, or, more likely, as spores, and remain in a state of incubation in certain depots, the lymphatic glands, perhaps, for a longer or shorter period of time. The term of incubation of these bacteria varies greatly, not only as compared with the incubation stages of other infectious diseases, but also in different cases of leprosy.
3. From the above-mentioned depots the disease spreads in the body, principally in the skin (*lepra tuberosa*), and notably in those regions exposed to insult, the face, hands, elbows, and knees, and also in the peripheral nerves (*lepra anæsthetica*). Other parts of the body, testicles, spleen, cornea, cartilages, and liver, are less subject to invasion.
4. The bacteria or spores give rise to inflammatory processes in organs or parts of the body which are supplied with bloodvessels, but in those parts where there are no bloodvessels to immigrations (*Einwanderungen*) of cells from the periphery inwards. The lymphatic cells containing spores or bacteria constitute the material of which the special neoplasms of leprosy are made up. The specific action of these bacteria transforms the ordinary wandering cell into the specific cell of leprosy, the shape, course, and disappearance of which are characteristic.
5. Leprosy is probably an infectious disease, and its specific products are contagious. The disease is not only directly contagious, but also indirectly so, its specific bacteria or germs being transferred by various objects.
6. Leprosy is not hereditary.—*Boston Med. and Surg. Journal*, April 27, 1882.

Acne Keloid.

At a meeting of the Pathological Society of London, held April 18, Mr. MORRANT BAKER said that, so far as he was aware, no case of this disease had been recorded in England. The patient, who was in attendance, was a middle-aged man, who presented in the nape of the neck a flat patch, with an indented overhanging edge, and a smooth, dark-red surface, which projected about one-eighth of an inch above the surrounding skin. A few hairs in bundles projected through

the surface of the tumour from a lower level. The skin was not especially sensitive; surrounding the patch were a number of firm tubercles, each perforated by a hair, which issued from its summit. The summit had a yellow pustule-like appearance. The larger patch was evidently formed by an aggregation of many of these tubercles. These smaller tubercles closely resembled at first sight the pustules of *acne vulgaris*, but were entirely different in structure; for each seemed to be composed of soft, unbroken, red-scar tissue, its summit perforated by a hair, which was rendered especially evident by the yellow quasi-pustular appearance of the epidermis which surrounded the orifice of the follicle. The patient suffered very little inconvenience. He was a butcher, aged forty-seven, who was in excellent health; he attributed the origin of the growth, which began about four years earlier, to a poisoned wound, but this was apparently a mere guess. Mr. Baker had met with one other instance only of the disease; the patient was an old gentleman, who attributed the disease to the irritation of the edge of the collar; he declined any cutting operation, but consented to cauterization with nitric acid, and the growth did not recur. Professor Kaposi, in writing on *Frambæsia*, referred to a disease in which bright-red, papillary, weeping, and partially ulcerating excrescences (which bled easily) existed on the scalp, and proposed to call it *Dermatitis papillomatosa Capillitii*; but Mr. Baker would not have thought of identifying his case with this disease, but that Professor Kaposi and Dr. Hans Hebra, who saw the case during the Congress, recognized it as identical with the disease described by the former. M. Verité informed him that it was identical with the disease called *acne keloid* by M. Bazin, and Mr. Baker preferred to make use of this term, because it expressed fairly well the naked-eye features of the growth.—*Brit. Med. Journ.*, April 22, 1882.

SURGERY.

The Value of the Details of Listerism in Abdominal Surgery.

MR. LAWSON TAIT read a paper on this subject before the Surgical Society of Ireland on February 24. There were three general principles, or axioms, with a statement of which he would begin his paper: 1. In discussing the question, all empirical statements should, as far as possible, be avoided. 2. The smaller the range and the fewer the disturbing elements the better; *i. e.*, for the deciding of such questions, it was better to compare the results obtained in one series of operations, for example, ovariectomies, than to compare those of several series of major and minor surgical operations. In other words, a series of repetitions was more likely to give accurate results than mixed cases. 3. In the peritoneum was a cavity peculiarly susceptible to septic influences; the abdominal viscera were, therefore, a peculiarly good field for such an investigation. The basis of Lister's theory of putrefaction by means of bacteria, etc., had long ago been proved beyond dispute as regards dead matter. But Mr. Lister assumed for living matter the same sequence of events as in the case of dead. This had never been proved. If a wound were full of blood-clot, and this was kept antiseptic, it would become organized, and form part of the tissue it lay near, just as a blood-clot would do in the interior of the body, being, in both cases, protected from the attacks of the bacteria in the air. Blood-clots in the body were not truly dead, but only in a low state of vitality, insufficient, however, to preserve them from the attacks of bacteria. Dr. J. Hamilton, of Edinburgh, in his experiments on sponge-graft-

ing, had shown that a thoroughly dead sponge would do without Listerism what the blood-clot would do with it—viz., become organized. It would even do this in a putrescent wound, because it was sufficiently tough to resist the attacks of the bacteria, while the bloodvessels of the neighbourhood were working their way into, and forming a network through, its substance. In the same way, the blood-clots, being finely porous, offered support to the fine bloodvessels developed; but being too frail to resist the attacks of bacteria, became putrescent before time had occurred for the vessels to be formed, unless protected by antiseptics. Mr. Tait enunciated his opinions to the effect that, whilst accepting the germ-theory, he repudiated Mr. Lister's application of it in surgery. However, putting theory and inclination aside, he determined to give Listerism a fair trial in one hundred abdominal sections, nearly sixty of which were for ovarian tumours; and the conclusions arrived at were all against Mr. Lister's views. The most valuable information was to be obtained, not by noting the ratio of deaths, but by observing under what mode of treatment the recoveries were most easy, even, rapid, and uncomplicated. For this purpose he exhibited comprehensive charts of a large number of cases treated by various methods, showing temperature, pulse, duration, etc., of the cases in each group. Those treated by complete Listerism gave the worst results. He, therefore, wished to try if this result was due to the method or to the carbolic acid used. He divided the investigation into three groups: (1) the use of the spray; (2) the preparation of the sponges; and (3) the details during the operation. In group 1, the spray was used regularly, beginning with the carbolic acid solution, 1 in 20; then reduced to 1 in 30, then to 1 in 50, 1 in 100, 1 in 1000, and finally a spray of pure water was used. The recoveries improved in each as the carbolic acid was reduced in strength. In group 2, the sponges were treated with solutions of the acid gradually reduced in strength, as in group 1, with similar results; so also group 3. The investigation lasted over two years. He, therefore, gave up the use of carbolic acid altogether; but still keeps his instruments, ligatures, sponges, etc., in a bath of pure water—not to avoid bacteria, but to keep them wet. Bacteria, which produced putrefaction in dead matter, he considered harmless in the living peritoneum. Lister's plan had done an infinity of good, but his theories of its action had been proved to be untenable.—*British Medical Journal*, April 15, 1882.

Sulphide of Calcium as an Antisuppurative.

Dr. ANDREW H. SMITH, Chairman of the Committee on Restoratives of the Therapeutical Society of New York, furnishes to the *New York Medical Journal and Obstetrical Review* for June, 1882, a report of the committee on the use of sulphide of calcium for the purpose of preventing or diminishing suppuration. After giving the experience of several members of the society, Dr. Smith concludes his report as follows: Judging from this limited number of cases, it would seem that we are warranted in concluding that in many cases of suppurative affections, ranging from the small pustules of acne to extensive suppurating surfaces, an appreciable, and often a very marked, benefit is derived from the use of the calcium sulphide, suppuration which would otherwise take place being averted, or the quantity and duration of an existing discharge being lessened. At the same time its action is not uniform; and in many apparently favourable cases it will fail entirely. The drug is somewhat prone to irritate the stomach, and this circumstance affords an indication for small doses frequently repeated, instead of larger ones at longer intervals. One-tenth of a grain every two hours in acute cases will generally secure the full therapeutical action of the drug, but larger doses may sometimes be required, and some patients will bear well a grain

three or four times a day. Even in small doses the sulphide will occasionally produce headache, and the patient is usually more or less annoyed by eruption of sulphuretted hydrogen.

A Method of Removing Benign Tumours of the Breast without Mutilation.

Prof. T. GAILLARD THOMAS, Surgeon to the New York State Woman's Hospital, contributes to the April number of the *New York Medical Journal and Obstetrical Review* a paper in which he expresses himself in favour of removing benign tumours of the breast as a rule, because the mere presence of a tumour in the breast usually renders the patient apprehensive, nervous, and often gloomy, while with our present improved methods of operating, the patient is exposed to slight risks, the danger of growth of the tumour is removed, and with this disappears at the same time that of the subsequent degeneration of a benign into a malignant growth. If, in addition to these advantages, we can add the avoidance of all mutilation to the person, we have strong grounds for departing from the practice of non-interference. The method of operation described Dr. Thomas has practised thus far in a dozen cases. He distinctly states that it is entirely inappropriate for tumours of malignant character, and that it is applicable neither to very large nor to very small benign growths, being insufficient for the former and unnecessarily radical in its character for the latter. The growths for the removal of which he has resorted to it have been fibromata, lipomata, cysts, and adenomata, and have varied in size from that of a hen's egg to that of a duck's egg or a little larger. The operation is thus performed: The patient standing erect and the mamma being completely exposed, a semicircular line is drawn with pen and ink exactly in the fold which is created by the fall of the organ upon the thorax. This line encircles the lower half of the breast at its junction with the trunk. As soon as it has dried the patient is anæsthetized, and with the bistoury the skin and areolar tissue are cut through, the knife exactly following the ink-line until the thoracic muscles are reached. From these the mamma is now dissected away until the line of dissection represents the chord of an arc extending from extremity to extremity of the semicircular incision. The lower half of the mamma which is now dissected off is, after ligation of all bleeding vessels, turned upward by an assistant and laid upon the chest-walls just below the clavicle. An incision is then made upon the tumour from underneath by the bistoury, a pair of short vulsella forceps is firmly fixed into it, and, while traction is made with it, its connections are snipped with scissors, the body of the tumour being closely adhered to in this process, and the growth is removed. All hemorrhage is then checked, and the breast is put back into its original position. Its outer or cutaneous surface is entirely uninjured, and the only alteration consists in a cavity at the former situation of the tumour. A glass tube with small holes at its upper extremity and along its sides, about three inches in length and of about the size of a No 10 urethral sound, is then passed into this cavity between the lips of the incision, and its lower extremity is fixed to the thoracic walls by India-rubber adhesive plaster, and the line of incision is closed with interrupted suture. In doing this, to avoid cicatrices as much as possible very small round sewing-needles are employed; these are inserted as near as possible to the edges of the incision, and carry the finest Chinese silk. After enough of them have been employed to bring the lips of the wound into accurate contact, the line of incision is covered with gutta-percha and collodion, and the ordinary antiseptic dressing is applied. If the glass drainage-tube acts perfectly, there is no offensive odour to the discharge, and the temperature does not rise above 100°: the tube is in no way interfered with until the ninth day, when the stitches are removed. If, on

the other hand, the tube does not appear to perform its function satisfactorily, it is manipulated so as to cause it to drain all parts of the cavity, and warm carbolicized water is freely injected through it every eight hours. On the ninth day, when the stitches are removed, the tube is removed likewise.

Diagnosis of Injuries of the Abdomen.

In a communication by Dr. BECK on cases of injury to the intestines, liver, and bladder (*Deutsche Zeitsch. für Chir.*, Band xv.; *Med.-Chir. Rundsch.*, 1882, p. 112), it is stated that a prompt and decided diagnosis as to rupture of an internal organ in cases of a blow on the abdomen is attended with extreme difficulty, since there is not any one characteristic symptom of such lesion, and it is only through careful observation and study of all the symptoms that a correct conclusion can be attained. Of the general symptoms, a high degree of shock, which condition is rarely absent in cases of severe abdominal concussion, indicates laceration of an internal organ. Intense and persistent collapse, associated with a thready and very rapid pulse, and shallow and quick breathing, will remove any doubt as to the occurrence of internal bleeding. Whilst with simple abdominal contusion, febrile phenomena are seldom observed, a high and increasing temperature, together with increase of the pulse and respiratory movements, would indicate peritonitis from effusion of intestinal contents. Of the local symptoms, the most important is that of pain, which is localized, spontaneous, and but slightly affected by pressure. This pain steadily increases in severity until the stage of intestinal paralysis, when it ceases. In cases of contusion, on the other hand, the pain is not so acute; it is increased by pressure, varies in intensity at different times, and often ceases suddenly. The physical abdominal symptoms, as swelling, distension, resistance, and the changes in percussion-sounds, have not, Dr. Beck holds, the diagnostic value that have been claimed for them by Dr. Moritz (*St. Petersburger Med. Woch.*, 1879). Sudden tympanites, with a clear sound over the hepatic region, is not likely, in Dr. Beck's opinion, to occur with rupture of the intestine, unless this rupture be very extensive. In ordinary cases, the intestinal gas escapes into the abdominal cavity so gradually, and in such small quantities, that it could not give rise to any sudden and marked external signs. On the other hand, in some cases of abdominal contusion without rupture of intestine, Dr. Beck has made out a clear percussion-sound over the region of the liver, this condition having been due to paralysis of a small portion of intestine, and to accumulation above this paralyzed portion of a considerable quantity of gas.

The later local symptoms observed in cases of intestinal rupture are usually but the results of the peritonitis due to escape of poisonous gas. Immobility of the patient and dread of being disturbed are not, it is stated by Dr. Beck, characteristic symptoms of ruptured intestine. In almost every case of abdominal injury, the patient at first remains at absolute rest; but, in advanced stages, in cases of rupture, and after peritonitis has spread extensively, the patient, suffering from pain and the distension of tympanites, endeavours to allay his intolerable condition by frequent changes of position. Much importance is to be attributed to vomiting, which, in cases of slight abdominal injury, soon ceases after the disappearance of the symptoms of shock. In cases, on the other hand, of communication between the intestinal canal and the peritoneal sac, vomiting steadily increases, and the patient is much troubled by frequent and profuse ejections of bilious fluid. Retention of urine and difficulty of micturition are to be regarded as symptoms of some value. Neither of these is likely to be observed in cases of slight abdominal injury; but the use of the catheter is often required when peri-

tonitis has resulted from rupture of the intestine, or of some other internal organ. The following conditions indicate with certainty the occurrence of rupture of the bladder: intense pain in the region of the bladder, anuria, signs of the presence of free fluid in the peritoneal sac, swelling and distension of the abdomen, purulent peritonitis, which, however, does not run so rapid a course as that due to rupture of intestine, pelvic infiltration, and a small quantity of urine in the bladder, and this mixed with fluid or coagulated blood. The extent and severity of this collection of symptoms vary in different cases, according to the seat of the vesical rupture.

In discussing the treatment of abdominal injury from direct violence, particularly from a kick, Dr. Beck points out that it is advisable, in cases of doubt, to take the most unfavourable view of the case, and to treat the patient in accordance with such view, by insisting on absolute rest, by applying leeches and cold compresses to the abdomen, and by administering opium internally, or, when there is obstinate vomiting, by giving subcutaneous injections of morphia. The patient should occasionally suck small lumps of ice, and be restricted to cold and fluid nourishment. By no means should any clyster be administered, lest, by such treatment, active movements of the injured intestine be excited.

It has been proved, on *post-mortem* examination, that, under such treatment as this, sealing together of the margins of the intestinal rent by fibrinous exudation and even firm occlusion may result; but, in such cases, when but even a very small quantity of intestinal contents has been effused, this treatment rarely results in cure. Operative interference, in cases of intestinal rupture, ought, in Dr. Beck's opinion, not to be considered; as in many of these cases the rupture is inaccessible through its deep situation, and through the gluing together of the intestinal loops by the products of recent peritonitis.—*London Medical Record*, April 15, 1882.

The Elastic Ligature in Abdominal Surgery.

A recent number of the *Berliner Klinische Wochenschrift* contains an interesting communication on the intra-peritoneal treatment of the pedicle of uterine fibroids, and the removal of tumours and parts of the abdominal viscera by the elastic ligature. The paper is by Dr. KASPRZIK, assistant in the Freiburg gynæcological clinic, and is based upon experiments conducted by Professor Hegar. The author believes that in the elastic ligature a means has been discovered by which not only the complete, but the partial, removal of the spleen, kidneys, omentum, even of the liver, can be accomplished without excessive risk. The extremely favourable results which Professor Hegar had obtained with the elastic ligature in the extirpation of uterine fibroids—the risk of secondary hemorrhage being by it almost completely abolished—led him to devise a series of experiments to test its behaviour in the abdomen, and its applicability to other possible requirements of abdominal surgery. The first set of experiments were performed to see what happens when a bit of India-rubber tubing is left in the abdomen. They show that it was borne exceedingly well, that it did not excite suppuration or peritonitis. In the second group of experiments, pieces of omentum, uterus, spleen, liver, and kidneys were surrounded with the elastic ligature, and the piece thus secured cut away either with knife, scissors, or the platinum blade of Paquelin's cautery. It was found that parts of the uterus, omentum, or spleen might thus be removed with safety. In the case of the omentum and uterus, India-rubber threads were sufficient; but in that of the spleen, thin solid cords were found to cut through the tissue; but when a piece of India-rubber tubing was used the results were successful. The experiments in removal of pieces of liver and kidney terminated unfavourably; but they were

few in number, and Professor Hegar hopes that, by continuing them, knowledge may be gained as to the kind of ligature, and the tension to be put on it, which may lead to success here also. In any case, he thinks, he has proved that the stump of the uterus may be treated with the elastic ligature without risk. He does not think, however, that on that account the question of the intra- or extra-peritoneal treatment of the stump is finally settled. The *technique* of the elastic ligature is very important. It is necessary to know how much stretching the India-rubber will bear, and how much will be best for the stump. The firmer the tissue of the latter, the higher will be the tension of the ligature required to arrest hemorrhage. If, on the other hand, the stump is soft and vascular, a too tightly stretched ligature will cut through it, and dangerous hemorrhage result. The ordinary method of tying does not suit the elastic ligature, because it slips before the knot can be made fast. Professor Hegar, therefore, simply crosses the ends, seizes them with a special pair of forceps, something like scissors with blunt blades, and then ties together with silk or wire the ends of the ligatures where they cross one another, between the forceps and the stump. The ends are then cut off on the other side of the forceps, and the latter removed.—*Med. Times and Gaz.*, May 6, 1882.

Excision of the Pylorus.

The *Wiener Medizinische Blätter* of May 18th contains an account of a discussion, at a recent sitting of the Congress für Innere Medizin, on the diagnosis of carcinoma of the stomach, and on the operation of resection for that disease. Dr. HENCK, of Heidelberg, read the case of excision of the pylorus for carcinoma performed ten months ago by Professor Czerny, which was briefly described by the latter surgeon at the International Medical Congress, and is recorded in its *Transactions*; and it is satisfactory to learn that the patient, who gained eleven pounds' weight at the end of the sixth week of the operation, was, at the beginning of last month, ten months after the operation, quite well, with no symptoms of recurrence of the disease. Dr. Henck tabulated the clinical history of twelve resections of the stomach. One, which recovered, was performed in a case of stricture of the pylorus following perforating ulcer. The remaining eleven were for the removal of cancerous growths; four of these recovered from the operation; out of the recoveries, three patients are still alive, and free from any recurrence; the fourth is known to have died four months after the excision, from a return of the disease. In the discussion which followed the reading of Dr. Henck's paper, Professor Lichtheim observed that mobility of an abdominal growth detected by palpation in the region of the pylorus was no proof that, if the growth were pyloric, there were no adhesions. In a case under his care, the swelling could be freely moved about under the abdominal wall when the patient was narcotized; yet, on opening the abdominal cavity, the pylorus was so strongly adherent to neighbouring parts, that its removal was impracticable. Professor Kühle stated that the rapid implication of the chain of lymphatic glands in front of the bodies of the vertebræ behind the stomach, in cancer of that organ, renders many cases unsuitable for surgical treatment. Dr. Henck remarked that the same objection stands in the way of operation in cancer of any other organ. As early diagnosis is so important, Dr. Ewald asked if the members of the Congress could confirm the theory of Van der Velden, that free hydrochloric acid was absent in the gastric juice in cancer of the stomach; but no researches had been made towards the confirmation of this theory by those present who had some experience of operations for the radical cure of malignant gastric disease.—*British Med. Journal*, June 3, 1882.

Lumbar Colotomy for Stricture of Descending Colon.

At the meeting of the Royal Medical and Chirurgical Society of London, a paper was read upon a case of excision of a stricture of the descending colon, through an incision made for a left lumbar colotomy, with remarks, by Mr. THOMAS BRYANT. This was a case of stricture of the descending colon, in which he excised the diseased segment of bowel through the wound made for a left lumbar colotomy, the patient recovering. The operation was performed on a lady aged fifty, who had suffered from complete obstruction for eight weeks, and was very feeble. The stricture could not be felt from below. The bowel was removed through the oblique incision made for left lumbar colotomy, by simply pulling the strictured segment through the wound and stitching each portion of the bowel with its two orifices as divided to the lips of the wound. The stricture was of the annular kind, and involved about one inch of the bowel. It was so narrow as barely to admit the passage of a No. 8 catheter. The preparation was exhibited with microscopical appearances of the growth in section as made by Dr. Goodhart. Mr. Bryant said he believed the operation he had performed was a new one, and that it was applicable to not a few of the cases of stricture of the descending colon. It had suggested itself to his mind from seeing cases of localized or annular stricture of the bowel which were free and movable, both in operations of colotomy as well as in the post-mortem room; but the case read was the first in which he had put the suggestion into practice. He pointed out how these annular strictures were generally local diseases, and, consequently, how desirable it was that they should be removed where possible. He suggested that the question of the excision of the diseased growth should be entertained as soon as the diagnosis of the case was made, and that to every case of colotomy for chronic obstruction of the descending colon the possibility of being able to remove the diseased bowel by operation should be considered before the bowel is opened for a colotomy operation. He then showed how desirable it was that the question of excision or of colotomy should not be postponed till the patient's powers were too feeble to bear either, as is now too often the case. He did not regard the operation he had performed as more serious than a colotomy in which the peritoneum was wounded.

Mr. JOHN MARSHALL remarked on the interest and importance of the paper, and the distinction from other cases where portions of the bowel have been removed, and the segments reunited. Mr. Bryant's operation was less formidable, but fully as effectual in affording relief.

Mr. G. POLLOCK thought the case redounded very much to the author's credit. He was not aware of a similar case, and believed it to be the first in British surgery. Two or three years ago he (Mr. Pollock) considered this operation should be performed, and discussed it with his colleagues. In a case in which he had performed left colotomy he got below the stricture, which could be felt above, but it was too bound down by adhesions for removal. A right colotomy was, therefore, done, and death ultimately took place; the long continuance of distension had produced a cracking of the peritoneal coat, a result he had often seen, and one which could be obtained experimentally. In one case of stricture of the sigmoid, one like Mr. Bryant's, the patient survived colotomy two years and ten months, when he died from fatty degeneration of the heart, and post mortem the disease was found to have very little extended, only a coil of small intestine had just become adherent to it. In this case he believed the removal of the stricture might have much prolonged life, had the cardiac conditions not been present. Mr. Pollock was sure that he had seen cases in which this operation might have been performed.

Mr. CRIPPS had often thought of the same thing before, and so far as he knew, Mr. Bryant was the first to do it in this country, although last year it had been done in Germany, and Billroth acted on the same principle in excising pyloric stricture. All these strictures commence as a deposit of adenoid growth in the submucous tissue. After a while ulceration and cell proliferation occur, and a constriction takes place, and the disposition of the muscular fibres determines the annular form of the stricture. The malignancy of the disease lay not so much in the growth itself as in the locality attacked, and if removed there may be no recurrence. He suggested that in sigmoid strictures an incision should be made external to the rectus muscle, so as to expose the diseased part more fully than is possible in the confined space in the loin. In either case the peritoneum would have to be opened. The objection to reuniting the divided bowel would be the risk of fecal extravasation.

Mr. H. MARSH mentioned the case of a woman fifty-four years of age suddenly seized with symptoms of acute intestinal obstruction, so that the diagnosis of a constricting band was made. The abdomen was carefully opened in the middle line, when the cause was found to be an annular stricture in the upper part of the sigmoid. The uncertainty of being able to remove the disease by lumbar incision is very great, and, therefore, knowing how limited the diseased condition in these cases is, the better course would be to open the abdomen, as Mr. Cripps had mentioned, which would probably give more successful results than Mr. Bryant's plan. He followed Mr. Pollock in urging early operations, for if the intestine be allowed to get over-distended the operation was certain to fail.

Mr. H. MORRIS quite agreed with Mr. Marsh and Mr. Cripps, that if the operation is to be introduced for all forms of stricture abdominal section was preferable, but in such cases as Mr. Bryant's the colotomy incision was better, for it requires only one incision into the peritoneum, and the distended bowel adds greatly to the risk of fecal extravasation. In a case in which he removed a large part of bowel for intussusception, he was obliged to stitch the two ends together on one aspect, and to make an artificial anus in the front of the abdominal wall.

Mr. BRYANT, in reply, said that he felt it best to adhere to the lumbar incision, the oblique one he published admitting of more space than the ordinary colotomy wound. Thus at least four or five inches of the descending colon can be dealt with in the dead subject, and more than that in the living. It must also be borne in mind that nine-tenths of the strictures are in the descending colon and the rectum; and of the former the majority involve the sigmoid and splenic flexures. If the part is movable, it can be excised; the operation is not possible when there are adhesions, and that would be an objection to opening the abdomen in front. The question should be excision, if practicable; colotomy where excision is not feasible.—*Lancet*, April 1, 1882.

Splenectomy.

Mr. WARRINGTON HAWARD read notes of a case of splenectomy at the meeting of the Clinical Society of London held March 24. The patient, a woman, aged forty-nine, had usually enjoyed good health. Had never suffered from ague or any intermittent fever. The catamenia had ceased three years. She had been seven years married, but had no children. For eighteen months she had suffered pain in the left side of the abdomen, and for ten months had been aware of an abdominal tumour, which had been steadily increasing in size, and which distressed her by its weight. When admitted into St. George's Hospital, she was a rather stout woman, of good complexion. She did not look at all anæmic,

and although the number of the white globules of the blood was increased, she showed no other sign of leucocythæmia, excepting a greatly enlarged spleen. The spleen occupied the greater part of the left side of the abdomen, and extended from the loin to three inches beyond the middle line, and from the ribs to the groin. The tumour was firm, well defined, and moderately movable. It produced great discomfort from its weight, and a dragging sensation whenever she moved about. There was no other glandular enlargement, and the rest of the viscera were healthy. She had no palpitation or dyspnœa, nor had she suffered any hemorrhage. Her temperature, pulse, and respiration were natural. The urine was natural. It having been decided to remove the spleen, Mr. Howard performed abdominal section for the purpose. An incision was made in the middle line of the abdominal wall, extending from two inches below the ensiform cartilage to within two inches of the pubes. The enlarged spleen at once presented, and was found free from adhesions. In endeavouring to tilt up the lower end of the tumour, a rent occurred at its upper margin, from which free hemorrhage took place for a moment, but the bleeding was speedily arrested by the pressure of a sponge upon the torn part. The vessels at the pelvis, which were enormously enlarged, were then clamped and ligatured, after which those of the gastro-splenic omentum were secured by passing an aneurism-needle threaded with silk through the membrane, and tying it in several separate portions. The connections of the spleen were then severed, and the organ delivered without further difficulty. Carbolized silk was used for the ligatures, and the only hemorrhage of any consequence was that which occurred from the rent in the spleen. While the wound was being closed, the patient suddenly became profoundly collapsed, but was revived by artificial respiration and the subcutaneous injection of ether. Five hours after the operation vomiting commenced, and, persisting with great frequency, rapidly exhausted the patient, who died in the evening of the day of operation. The spleen, both to the naked eye and microscope, presented the appearance of simple hypertrophy. Post-mortem, no disease of any organ other than the spleen could be discovered. There had been no hemorrhage after the closing of the wound, but the abdomen contained some thin blood-tinged fluid. With the exception of slight ecchymosis in the immediate neighbourhood of the wound, the peritoneum and abdominal viscera showed no sign of injury. The indications for and against the operation were considered, and it was shown that, although there was an increase in the white corpuscles of the blood, the patient exhibited none of the other signs of leucocythæmia excepting the large spleen; that there was no sign of anæmia nor tendency to hemorrhage; and that the condition of the blood would not have been suspected excepting on microscopical examination. The woman's suffering seemed entirely due to the dragging weight of the tumour, and there was no sign of any other visceral disease. The fatal result was certainly not caused by hemorrhage, which is the chief danger in cases of leucocythæmia, but seemed to be due rather to the disturbance of the great sympathetic plexuses, and the consequent shock and vomiting. The paper concluded with some remarks upon the method of the operation.

Dr. STEPHEN MACKENZIE was glad of the opportunity of raising the question whether removal of the spleen in leucocythæmia was justifiable. Recently a patient had been sent to him with a greatly enlarged spleen, and the blood was found to contain a great excess of colourless corpuscles. He informed the friends of the patient that, though ordinary methods of treatment might afford palliation and delay the progress of the disease, an unfavourable issue was inevitable. At the same time he mentioned that, in a few cases, the enlarged spleen had been removed, and the patient recovered; further, that the operation was a

very serious one, often fatal, and that very rapidly. After due deliberation, both the patient and his family desired that the operation should be performed. He (Dr. Mackenzie) asked his colleague Mr. Reeves if, in these circumstances, he was willing to operate; and Mr. Reeves expressed his readiness to do so. The patient was admitted into the London Hospital for the purpose. He was then found to have a little œdema of the feet, and it was decided to defer the operation until attempts had been made to improve his condition. At this time the proportion of colourless to coloured corpuscles was about one to seven, the coloured corpuscles being about 65 per cent. He was kept in bed, and dialyzed iron was given. Under this treatment the blood-state improved, so that the proportion of colourless to coloured corpuscles fell to one to eighteen or nineteen, and the coloured corpuscles rose to over 70 per cent. Meanwhile Mr. Collier's tables, giving the results of the whole of the recorded cases in which the spleen had been removed, appeared—showing that, though the spleen had been excised successfully in several cases, in no case had the operation succeeded when it had been performed for leucocythæmia. On conferring with Mr. Reeves, it was felt right to inform the patient that, since the operation had been mentioned, the subject had been carefully investigated, and it was found that no case of exactly the same nature as his had recovered; and that, in these circumstances, it was felt right to advise him not to undergo it. The patient and his father, however, made up their minds that, in spite of this information, they wished the operation performed, seeing that, if it were not done, death would only be delayed. He (Dr. Mackenzie) noticed on this occasion, however, that the œdema of the feet, which had disappeared, had returned, and that there was a slight puffiness of one hand; and that, though the blood-state had improved, the patient's general condition was not so satisfactory, and leucæmic retinitis and retinal hemorrhage had made their appearance. In these circumstances, he strongly advised Mr. Reeves not to accede to the patient's request, believing that the operation would be rapidly fatal. As regarded theoretical considerations, it must be admitted that to a certain degree the operation was an experimental one, and the very unfavourable results hitherto obtained did not offer any encouragement. But if, as was asserted, the disease took its origin from malarial affection, there were grounds for believing the spleen was primarily at fault, and removal of the organ might be expected to benefit the patient, provided it could be safely performed. It therefore seemed to him desirable to raise the point whether the operation was justifiable when the blood-disease was not too advanced, in young subjects.

MR. CLEMENT LUCAS said the terrible mortality which followed excision of the spleen in leucocythæmia—a mortality which left no case of recovery—ought not to discourage surgeons from attempts to relieve a fatal disease, but rather to direct their attention to less serious operations than excision, which might possibly effect a cure. If the disease were a simple hypertrophy, would not ligature of the splenic artery reduce the size of that organ and bring about relief? Ligature of the main artery in cases of Barbadoes leg was followed by great reduction in the size of the limb, and a similar operation for the spleen held out hopes of cure. The operation might be difficult, but, with a free incision, ought not to be impracticable, and could scarcely be so serious as that for the removal of the whole organ.

MR. REEVES now had a case in which the operation had been seriously contemplated, but as Dr. S. Mackenzie had given such a good account of it, there was no need for him to say anything on that head. His reasons for desiring to operate were the youth of the patient, the fact that the disease was not far advanced, and the physical vigour, as well as the determined mental condition of

the patient, and his friends, who—after every risk was plainly put before them—decided to have the operation done. Mr. Reeves had looked up twenty-one cases of splénectomy, and found that about a quarter had recovered. But, very shortly after, Mr. Collier's paper appeared, pointing out that all the leucocythæmic cases which had been operated on had died. This, of course, made him hesitate; but on analyzing the table he found that most of the cases were much older than his patient, and were in a more advanced stage of the disease, so that he was still inclined to give his patient the forlorn hope offered by operation; but on consultation again with Dr. S. Mackenzie it was decided that, although the blood-condition had much improved, still, on the whole, operation must not now be thought of. He thought that, if patients were seen in an earlier stage, the operation would have a much better chance, but at present our knowledge was very imperfect, and, seeing that leucocythæmia was so common among some of the lower animals, it was highly desirable that observations and experiments on them should be made, with a view of ascertaining if removal of the diseased spleen was followed by permanent benefit. He had thought of tying the splenic artery, but shrank from it, because he feared that the spleen might necrose and necessitate its removal, thus adding a second severe operation to one which would, no doubt, be difficult, and, under the circumstances, very hazardous. It was most desirable, by selecting proper cases, to ascertain if surgery could be of use, where medicine had, unfortunately, been hitherto invariably unsuccessful. Malaria was said to be a frequent cause of the disease, and without denying this, he would ask, was it a common cause, or a cause at all, in the lower animals? Dr. Eadie, of Pimlico, had recently consulted him in reference to a case of a strong, well-built gentleman, aged twenty-two, who had never been exposed to malarial influences, whose circumstances had been always unusually good, and who had never had syphilis. At one time this patient was extremely weak, and looked very like dying, but lately he had much improved in blood-condition and general strength. His spleen was about three and a half times its normal size. This case was quoted as showing that something other than malaria, insufficient food, hygienic surroundings, and syphilis was at work in this instance.

Dr. GOODHART said that Mr. Warrington Haward had asked the question—a very important one—whether a mere excess of colourless corpuscles in the blood was of itself sufficient so to interfere with the coagulability of the blood as to condemn an operation. Dr. Goodhart thought that that question was capable of answer by the experience of the post-mortem room. This, now, in his experience, amounted to five or six cases, and in all it had been the same, that the coagula in the heart and great vessels were peculiarly flimsy, and in general appearance more like pus than blood. Of course it might be said that this was hardly an argument, seeing that by the time a case arrived at a fatal issue it had probably overstepped the distinction drawn by Mr. Haward between early and late leucocythæmia. But that was not the case. So far as the blood was concerned, cases were fatal with a far less proportion of white and red corpuscles than one in six. This proportion exists in Mr. Haward's case, and therefore, so far as the blood was concerned, he thought it might always be said of it that it was in a similar condition to that found in fatal cases. Looking, also, as he did, upon the existence of leucocythæmia as a late symptom, he doubted whether any case of leucocythæmia could, with propriety, be called early. But there was also another point to be considered, and that was the effect of an operation and the resulting pyrexia upon the condition of such blood as existed in these cases. He thought he had observed that they bore fever badly, and that the blood had a tendency to be more pus-like under such circumstances. Now that antiseptic treatment had reduced in great measure the risk of fever, such an argument had

less weight. Not if there was any truth in it—it should not be altogether overlooked in considering the risks of the operation—as it carried them beyond the mere operation itself into the larger stages of convalescence.

Dr. MARCET related particulars of the case of a dog from which the spleen had been removed about thirty years ago; the animal had subsequently lived many months, without apparently being in the least degree altered by the operation. It had then died from another cause altogether.

Mr. LISTER thought it most unfortunate that Mr. Haward's case had been fatal. Death had apparently resulted from the shock, although ether, not chloroform, had been given. The case was discouraging, as it was one favourable for the operation, and no hemorrhage had followed. Ligation of the splenic artery would be a dangerous proceeding. Experiments should perhaps be performed on the lower animals, to see if the spleen could live after ligation of its main artery, and if animals afflicted with leucocythæmia were cured by the removal of the spleen.

Mr. HAWARD said it was not at first suspected that the patient had leucocythæmia, although she had a large spleen. It was true that, in Mr. Collier's tables, the mortality after splenectomy in leucocythæmia was very great; but in this case there was no evidence of blood-change in the direction of leucocythæmia beyond that given by the microscope. The cause of death was not due to hemorrhage. The spleen was easily torn; and, at the rent which occurred in its substance during the operation, the hemorrhage was quite momentary, and no great amount of blood was lost. There was no oozing from the abdominal wall, and no difficulty in arresting the hemorrhage. Ligation of the splenic artery would be a very difficult operation if the spleen were much enlarged. Perhaps in future operations a clamp might be placed around the vessels, the spleen removed, and the vessels subsequently tied. The spleen had been removed in many cases, and the patients had recovered; so that the spleen did not appear to be a very essential part of the human economy. But, if there were an early stage of leucocythæmia, it came to be a question whether the operation should be attempted. Dr. Goodhart's remark as to the feeble clotting power of the blood after death from leucocythæmia should be remembered.—*Med. Times and Gazette*, April 8, 1882.

Nephrectomy for Scrofulous Kidney.

At the meeting of the Clinical Society of London, held March 24th, Dr. GOODHART and Mr. GOLDING-BIRD read joint notes of this case, which was that of a young man who had suffered from symptoms of renal affection for fifteen months prior to his first coming under observation. His emaciated state and general cachectic condition, combined with the pyuria and right lumbar pain from which he suffered, pointed at once to a scrofulous pyelitis on the right side. All the other viscera were healthy. Combined abdominal and lumbar palpation, on the right side, proved the presence of an elastic tumour at the site of the kidney that was tender, and was found, on watching, to vary in size inversely as the bulk of the pus passed in the urine. After due consideration, it was agreed upon by the authors that active steps should be taken to afford relief: these reasons being founded upon the almost universal tendency of these cases rapidly to end fatally; the proved inefficiency of medicines to arrest the progress of the disease; the fact that the disease was at first at least local; and that it was only later on that other organs became infected and diseased. It was further agreed that, in the patient's present condition, anything palliative, even in the way of tapping the swelling, would be but loss of time, and making demands on his strength to no purpose. Nephrectomy was therefore decided upon and performed; the whole of the kidney

was removed, after tapping it, through the wound, in order first to diminish its bulk. It weighed ten ounces, and was a characteristic specimen of serofulous kidney. Soon after the operation, extreme collapse supervened, from which the patient never rallied. At the inspection, the right urinary organs and the bladder were the only parts diseased; the latter, however, not irrecoverably so. While the gravity of the operation alone might account for the death, yet it was noticed that the pulse did not fail during the operation, neither on the necessary manipulation of the suprarenal bodies, nor at ligature of the pedicle. The collapse supervened at once on returning the patient to bed; and the possibility of the carbolic acid of the spray being absorbed by so large a raw surface, and in such close proximity to the large lymphatic sac (or peritoneal cavity), was suggested in explanation of the fatal ending to the case.

Mr. CLEMENT LUCAS considered that the operation, at which he was present, had been most carefully performed, and he thought the incision was the best for the case. He alluded to a case in which he had opened the kidney six years before the performance of nephrectomy, and there had been a discharge from the loin for all those years. He thought the ureter should be first tied, and cut through, and then the vessels could be the more easily ligatured. There had been a subcutaneous injection of morphia after the operation, which he thought might possibly have added to the patient's collapse. After operations for hernia, where morphia had been injected, he had seen two cases of collapse and death; so that he never now gave a morphia suppository after such operations until the patient had quite recovered from the chloroform. In his case of successful nephrectomy, the man was now well, and his wife had borne a child since the operation. Pus had continued to be passed in the urine for months after the operation, and had then gradually disappeared.

Mr. GODLEE said the pleura went down to, and even below the last rib; so that he considered the removal of a part of that bone a very serious operation. He presumed the tuberculous mass in the prostate might have been previously felt. It seemed to him that the operation was defective, inasmuch as it contemplated the removal of only a portion of a wide-spread tubercular disease.

Mr. MORRANT BAKER said that in a case of the kind under his care he had at first opened down to the kidney only, hoping the organ would dwindle; but it did not diminish after several weeks' waiting, and the subsequent operation was only rendered the more difficult, as the tissues around the kidney had meanwhile become much matted together. The first operation seemed, in fact, to have been useless. He had since seen the child, as she was ill. She was feverish, and had afterwards died; but the wound in the loin had quite healed some months before. The urine passed a few days before death had not been distinguishable from healthy urine. Perhaps, if she had had two kidneys, to remove effectually the products of the feverish attack, she might have also recovered from the illness which proved fatal. He desired to ask the President his opinion as to whether the exposure of such a large surface for nearly two hours to the carbolic spray added to the danger of a fatal collapse.

Mr. T. SMITH said he had never seen a case in which, if one kidney were tuberculously diseased, the other kidney and other parts of the urinary tract were free from disease. At any rate, after nephrectomy for tuberculous kidney, a portion of ureter similarly diseased would be left.

Mr. KNOWSLEY THORNTON had had a tolerably large experience in operations on the kidney; he had performed lumbar nephrotomy three times, and abdominal nephrectomy three times, and all the patients had recovered. He was thus in a position to speak from experience as to each method, and he had no hesitation in giving the preference to the abdominal section, by incision outside the rectus

abdominis, instead of in the median line. This was advocated by Langenbeck, of Berlin, at the Congress, and Mr. Thornton had found it most satisfactory. There was even less hemorrhage from the parietes than in the median incision; there was little or no exposure of the general peritoneal cavity, the renal vessels could be reached and ligatured before the kidney was enucleated, and much hemorrhage thus saved; and there was much less hemorrhage in enucleating through the outer layer of the meso-colon, than through the inner layer, where most of the vessels lay. He had twice operated by this incision during the last few weeks, and both patients had recovered with but little fever; indeed, convalescence was almost as rapid as after an ordinary ovariotomy. He had brought out the end of the ureter in each case, and fixed it in the wound; and this he regarded as important in avoiding sepsis. He had in one of the cases previously performed lumbar nephrotomy, hoping to cure by free drainage, but the only result was to increase the difficulty of the after nephrectomy, as in Mr. Morratt Baker's case; and he could not at all agree with Dr. Goodhart as to the advisability of making nephrotomy an introduction to nephrectomy. He had, however, found it possible to destroy the existing sepsis by the free use of tincture of iodine. In his last case the kidney weighed four pounds seven ounces, and contained twenty pints of pus, and it would have been quite impossible to perform the operation through the loin. From a careful consideration of the published cases, and from his own experience, he would strongly advocate Langenbeck's incision *in all cases*, and he believed that, with experience and care, the operation, though performed through two layers of peritoneum, might be made practically an extraperitoneal procedure, the peritoneum being closed immediately the opening for enucleation being obtained. In reply to Mr. Morratt Baker, he might mention that he had had several cases of abdominal operative surgery, under the carbolic spray, lasting two, or nearly three hours, and that he considered the chance of danger from the spray was very little indeed.

Dr. BARLOW said that, in a case operated on by Mr. Couper, the patient, a girl, was in good health several months after the operation. In her case the pyelitis, as in many other instances known to him, had been located in one kidney only.

Mr. BARKER said that, as to the removal of the last rib, in one case where the end of the rib was resected, the patient became cyanosed, with all the symptoms of a collapsed lung, and had died. In another case, operated upon by himself, he had unintentionally removed the end of the last rib in cutting down upon the kidney; no ill result had followed.

Mr. REEVES said that, although he had never had occasion to do nephrectomy, he had cut down on the kidney for exploratory purposes, and had seen nephrotomy and excision of the organ in three or four instances. The incision adopted was the usual oblique one as for lumbar colotomy, but nearer the rib. If more room were needed, this incision might be increased, or one at an angle to it added. He thought that intraperiosteal excision of a portion of the last rib was justifiable in cases where the organ could not be extracted without it, but he quoted a case in which a large kidney was removed by pulling up the last rib, and thus getting an inch to an inch and a half more room. This mobility of the last rib should be utilized as much as possible before proceeding to the somewhat severe measure of excising a part of it. There were some cases of cystic kidney, which could not be removed by the lumbar or extraperitoneal method; and he had recently assisted at such a case, which, before and during the operation, had closely simulated an ovarian tumour, so as to deceive experienced ovariotomists. Had it been attempted to remove this through the loin, the operation would either have failed, or only been concluded with serious and unsurgical damage to the peritoneum.

He, therefore, thought that large cystic kidneys should be removed by the intra-peritoneal method, although two layers of peritoneum were incised, as nowadays there was little risk in properly selected abdominal operations.

Mr. LISTER said he was pleased to hear that the means adopted by Mr. Thornton to render the wounds aseptic by the free use of tincture of iodine were efficacious. He had recently seen a lady, aged 24, sinking, with pus in the urine, in whom it was doubtful as to whether there was a calculous or serofulous kidney. Under chloroform, the kidney was felt to be large. Upon puncture of the organ, pus escaped; no calculi were discovered. The wound in the kidney-substance was enlarged, and cavities were detected, from which four or five ounces of pus escaped. Two large drainage tubes were introduced; the wound was sewed up, and covered with eucalyptus gauze. It might be asked why was this done? Because, in some such cases, after the letting out of such offensive pus, the next day only a serous oozing would occur, although bacteria might have been present when the pus was first discharged. Antiseptic treatment answered its purpose completely in such cases. That patient was now recovering; the discharge was lessening, and the wound was healed. Even if the kidney had proved to be tuberculous, and had had eventually to be removed, his patient could not at that time have survived the major operation of nephrectomy. He had never known the carbolic spray injure the patient, although used during a long abdominal operation.

Dr. GOODHART said that, as to the question of the removal of a part only of the disease, he believed the disease commenced in one kidney, then went to the bladder, and up the other ureter to the other kidney, which, after a year or two, became diseased. He did not think that it was an argument against the operation that the suppuration in the urine lasted afterwards, for it very soon diminished, and then ceased entirely.

Mr. GOLDING-BIRD said the patient was collapsed before he was put to bed, and did not die from the morphia, as he had quite roused. Neither did he think the pleura could have been hurt in any way. He thought each case must be decided on its own merits, so far as the question of nephrotomy or nephrectomy was concerned.—*British Medical Journal*, April 8, 1882.

Unsuccessful Nephrectomy for Calculous Pyelitis.

Dr. BARLOW and Mr. GODLEE read notes of this case at the meeting of the Clinical Society of London, held April 14th. The patient was a laundress, aged 57, of somewhat intemperate habits, who came under Dr. Barlow's care in June, 1881. Her family history presented no feature of interest; and though she recollected, on being carefully questioned, that she had passed a small calculus twenty-six years previously, she maintained that the present illness dated only from three months previously. She suffered now a considerable amount of pain, which prevented her from moving about, and had at one time a good deal of œdema—of the right leg especially—which subsequently disappeared. The urine contained a large quantity of pus; it was in fair amount, but not much more than about two-thirds of the normal quantity of urea was secreted in the twenty-four hours. The kidney was easily felt, forming a large tumour in the hypochondriac region. The woman was somewhat anæmic, and had a slight cardiac murmur, but was otherwise in good health. The amount of pain, and the quantity of pus in the urine, seemed to justify the authors in suggesting the operation to the patient—though not on pressing it—notwithstanding her comparatively advanced age; and, after due consideration, she consented to its performance. The existence of calculus had been previously ascertained by puncturing the kidney with

the needle of an aspirator. The operation was performed, with all antiseptic precautions, by Mr. Godlee on July 14th, that chosen being the abdominal section. It presented great difficulty from the density of the structures round the kidney, but was satisfactorily accomplished, the patient at the time suffering remarkably little from shock. A morphia suppository was at once administered, and some tincture of opium was given by the bowel later in the day. The patient appeared to be progressing favourably for the first twelve hours, and then passed into a quiet sleep. When aroused next morning it was found that the temperature was high; that little or no urine was being secreted; that the respirations were becoming very hollow; and that the patient was in a state of semi-consciousness. From this condition she did not recover, but she died about twenty-four hours after the operation. At the necropsy, the left kidney and the other viscera were found to be practically healthy. It was suggested that the amount of morphia administered had something to do with the patient's death, and that possibly the carbolic acid absorbed during the operation might have helped to this result; though, doubtless, the suppression of urine, from whatever cause it arose, was the most important factor. The parts removed, and half the kidney of the opposite side, were shown at the meeting.—*Brit. Med. Journ.*, April 22, 1882.

Nephrectomy.

In a lecture on this subject, delivered at the Samaritan Free Hospital, on April 19th, Mr. J. KNOWSLEY THORNTON mentions a proceeding which he believes he was the first to introduce, and which he considers to be of the greatest consequence to the safety of the patient and to the aseptic performance of the operation. He refers to the fixing of the bladder end of the ureter outside the abdominal incision, so that the septic material it is certain to contain is not left deep in the recesses of the wound. He tied it as firmly as possible with strong silk, and cut it off so as to leave only just enough stump to pass a pin through and keep it from slipping into the wound. He cleaned this stump well with iodine, and packed it round with a little cotton squeezed out of tincture of iodine. By this method he has been able to avoid putrefaction in the early stages of the case, *i. e.*, until the peritoneum is well sealed. He thinks the question of drainage in these operations must be decided at the time for each individual case. Whenever there is a loin opening, as in his first case, he should certainly use it, passing an India-rubber tube right through from the abdominal incision (as he did in that case), so that the wound could be at once flushed and washed out if any septic symptoms appeared. In any case in which he felt sure of asepsis, he should not drain, as he was sure the peritoneal surfaces about the wound would rapidly remove (absorb) fluid effused, as was the case in one of his cases.

To sum up, then, he would recommend that the lumbar incision be only used for cases in which there is strong suspicion that a calculus is present, and that the operation will end in nephro-lithotomy; and he should be disposed, in any case in which he had commenced by the lumbar incision, and then found it necessary to complete the nephrectomy, to do so by Langenbuch's incision, utilizing a portion of the already made lumbar incision for drainage, and closing the remainder. He would in all other cases, such as neoplasm of kidney, hydronephrosis, pyonephrosis, and floating kidney, operate by abdominal section, making the incision along the outer border of the rectus abdominis instead of in the median line.—*Med. Times and Gaz.*, May 6, 1882.

Nephrectomy for Hemorrhagic Cyst of Left Kidney.

Dr. G. LEOPOLD reports the following case (*Arch. f. Gynäkol.*, xix., No. 1): Mrs. A., aged thirty-three years, married ten years, one child. Six years previously noticed a swelling on the left side of the abdomen, which increased rapidly during last two years. *Status præsens*—The abdomen is completely occupied by a tumour extending up to lower border of the ribs; flatness on percussion everywhere but on circumference of tumour where it is tympanitic; the tumour is slightly movable from left to right, not at all from below upward. Digital examination revealed a retroverted hypertrophic uterus. Diagnosis: ovarian cyst. Laparotomy was performed, exposing a fluctuating tumour as large as a man's head, from which, when it was punctured, flowed about four quarts of a thick blood-red fluid. A prolongation of the capsule extended upward and backward and to the left, and was found to be in intimate connection with the left kidney, the lower end of which terminated in the tumour like a chalice. The hilus was then drawn forward and the vessels and ureter ligated in three portions, and, to prevent slipping of the ligatures, the kidney was removed in such a manner that a triangular piece of its parenchyma was left attached to the hilus. The whole was returned to the abdominal cavity, which was accurately and completely closed. Lister dressing. No drainage. Removal of dressing and sutures on eighth day. No reaction whatever. Discharged cured at the end of third week. Observations of urinary secretion showed it to be below the normal in quantity until the fourteenth day. No other change was noticed. Microscopical examination of the kidney showed its parenchyma to be entirely healthy, except at the lower end, where it terminated abruptly in a strong connective-tissue capsule, which was continuous with that of the tumour. The source of the hemorrhage could not be discovered. In this case our means for the diagnosis of abdominal tumours proved to be quite insufficient. Spence Wells gives the following as the most important points: Ovarian tumours are usually situated in front of the intestines, renal behind. Tumours of the left kidney are usually traversed vertically by the descending colon. A tumour of the kidney is always first found between false ribs and the ileum, grows at first in the direction of the umbilicus and thence into the hypochondrium, while ovarian tumours grow from below upward. Now these points may be very valuable where the tumours concerned are small, but are utterly unreliable in cases of large renal tumours. According to Olshausen, the latter occupy the entire abdominal cavity, so that it is impossible to trace their lateral origin. Immobility proves nothing, since large ovarian cysts are also immovable. Olshausen recommends the following: An asymmetric position of the tumour leaving a certain space on one side and the above-mentioned relation to the colon. But these also are of little value, for, as in this case, a large fluctuating tumour occupying an exactly central position, resting upon the pelvis in such a manner as to crowd the uterus backward, which could not be crowded upward, and was surrounded by intestine on all sides, all of these data perfectly justified the diagnosis of ovarian cyst, and even aspiration would have revealed little or nothing.

Since Kroner's computation, thirty-four new cases of nephrectomy have been reported; fifteen by abdominal, nineteen by lumbar incision. We have, therefore, seventy-six cases with the following results: thirty-eight by abdominal incision, twenty-two deaths, fifteen recoveries (result in one unknown); thirty-eight by lumbar incision, thirteen deaths, twenty-four recoveries (one not accounted for), so that the results from both methods are in inverse ratio to each other.—*American Journal of Obstetrics*, May, 1882.

Partial Extirpation of the Kidney for Pyelitis.

Mr. HOWARD MARSH read notes of this case at the meeting of the Clinical Society of London, held April 14th. The patient, a blacksmith, aged 35, was admitted into St. Bartholomew's Hospital in October last. He had had severe pain in the right loin for three years, and for eighteen months the urine had been ammoniacal and had deposited a light-coloured sediment. He had never observed blood. On admission he was pale, and his countenance was worn and anxious. The urine showed pus equal to a third of its bulk on standing, and also a small amount of blood; it was highly ammoniacal and very fetid. The patient complained of pain shooting down from the right kidney in the course of the ureter to the testis. There was some tenderness on pressure over the kidney, but nothing abnormal could be felt either in the groin or anteriorly. There was no stricture of the urethra, and no stone in the bladder. The patient was kept in bed, and in order to ascertain whether his symptoms depended on any bladder-disease complicating the mischief in the right kidney, the bladder was injected every morning, for ten days, with one grain of quinine dissolved in an ounce of slightly acidulated water, and subsequently with water gradually raised to a temperature of 120°. He was also put on a pure milk diet. But none of these methods improved the condition of the urine. At the end of two months, as he was still passing large quantities of fetid pus, the kidney was explored through an incision extending downwards and forwards from the last rib to the crest of the ilium. It was found greatly enlarged, sacculated, and very firmly bound down by dense inflammatory tissue. On stripping off its capsule—a matter of considerable difficulty—and puncturing its cortical substance, a large quantity of thick and strong-smelling urine escaped. As the whole kidney was evidently disorganized, an attempt was made to remove it, but it was so firmly adherent that this could not be accomplished. What had been exposed was, therefore, included in a double ligature and removed by curved scissors. No hemorrhage of any moment occurred during the operation, but the patient died in thirty hours of complete suppression of urine. On post-mortem examination, the right kidney was found converted into a number of large cysts. Three inches below its commencement, the ureter was so narrowed that its canal would only admit an ordinary probe. Above this point it was considerably dilated. These conditions seemed to have been produced by the healing of an ulcer in the ureter, perhaps of a tubercular character. The left kidney had the appearance of being fairly healthy; it weighed six ounces. The author remarked that he was induced to resort to an operation in this case—though, in consequence of the patient's general condition, he did so very unwillingly—in the hope of doing good either by extracting a stone, or by establishing free drainage, or of removing the kidney if it proved to be extensively diseased. It might be a warning for future cases that the condition of the kidney was much worse than there seemed reason to anticipate. Though it could not be felt during careful examination under ether, it was very large; it was so far destroyed that very little renal structure remained; and it was so firmly adherent that its removal was found to be impracticable. Seeing how limited was the space afforded by the incision in the loin, the author thought that experience was likely to show that the best method of removing large kidneys, or kidneys that were bound down by firm adhesions, was by abdominal section, the incision being made just external to the rectus muscle. He concluded by remarking that, though recent cases showed that the kidney might be safely explored by the lumbar incision, and though calculi of small size might be safely extracted from kidneys that were structurally healthy, further experience alone could teach in what cases the kidney might be safely removed. One point

must be carefully borne in mind—namely, the liability to suppression of urine from the opposite kidney. He thought the removal of kidney in persons over thirty years of age was, on this account, one of the most dangerous proceedings in the whole range of legitimate operative surgery.—*Brit. Med. Journ.*, April 22, 1882.

Nephrotomy.

During the early part of March nephrotomy was successfully performed by Dr. RODDICK, of the Montreal General Hospital, upon a girl of twenty, who had for six years been suffering from frequent and painful micturition, the urine voided being small in quantity, and more or less muco-purulent and bloody. At twelve years of age the patient had an attack of so-called *spinal fever* (?), at fourteen a severe sciatica, and shortly afterwards her urinary troubles began. Most of the ordinary methods of treatment were tried without much benefit; an examination was made for calculus, with negative results; rapid dilatation of the urethra was practised, several small villousities were removed from the mucous surface of the bladder, and weak nitric acid injections employed, but without any marked or permanent relief. Meanwhile, in spite of constant and careful treatment, the urine became gradually more purulent, and the patient's general health steadily declined. Last July chills and fever set in, accompanied by vomiting, alternating constipation and diarrhœa, and pain over the right kidney with tenderness upon pressure. By October a well-defined tumour could be made out in the right hypochondrium—a hypodermic needle was inserted, but failed to reach pus. From that time her decline was rapid, and although the appetite kept uniformly good, emaciation became extreme. On admission to hospital, a distinct fluctuating tumour was found occupying the right hypochondriac and lumbar regions. The urine, which was passed every half hour, was scanty, and contained mucus and pus in abundance.

The presence of pus in the tumour having been discovered by means of the aspirator, nephrotomy was performed with strict antiseptic precautions. A transverse incision was made in the loin, midway between the border of the ribs and the crest of the ilium, and about twenty ounces of putrid, foul-smelling pus with a urinous odour came away; the sac was secured to the edges of the wound with silk sutures. A careful digital examination revealed extensive disease of the kidney structure, but no concretions. The cavity was thoroughly washed out with a carbolic solution (1 × 40), a large-sized drainage tube inserted, and antiseptic dressings applied. On the third day symptoms of carbolic acid absorption having appeared, a twenty per cent. boracic acid solution was substituted. The operation has so far proved a complete success: the chills and fever have disappeared—the urine has increased in quantity, is passed painlessly, and at longer intervals. The strength and general condition of the patient improved so rapidly after the operation, that on the sixteenth day she was able to be removed to her own home.—*Canada Med. Record*, April, 1882.

Nephro-lithotomy on Account of Anuria.

The following interesting case (*Centralblatt für Chirurgie*, March 25) illustrates the soundness of the rule, which advises against extirpation of the kidney when the organ is otherwise healthy and a calculus is found in it. It appears probable that those causes which lead to the formation of stone in the kidney act upon both kidneys alike, and the removal of one exposes the patient to all the dangers which might result from the formation of a calculus in the other.

The patient was an unmarried lady, 27 years of age. She had suffered for ten

years with violent cramp-like pains during urination, radiating occasionally into the left side. Urine dark, of neutral or slight acid reaction. Dilatation of the urethra, with incisions into the sphincter vesicæ, was performed on the 13th of October, 1881. This was followed by cystitis and subsequently by a retro-peritoneal abscess, which latter was, by introducing the finger into the abscess cavity, found to be an abscess of the pelvis of the left kidney.

The daily rise of temperature had not taken place any more until February 8, 1882, when the thermometer registered 38.1° C. in the morning. No discharge of urine. Afternoon temperature 40.4°. Rigor. Catheterization was performed, but no urine, only mucus and a small stone being drawn. Pains in the right lumbar region radiating toward the bladder. The following diagnosis was made: complete obliteration of the left kidney by the abscess and momentary closure of the right ureter by a calculus resulting in complete anuria.

Evening temperature 38.4°. Nausea. Anuria.

Feb. 9. Morning temperature, 39.1°. Noon, 39.5°; evening, 39.4°. Constant nausea, with tendency to vomiting. Vomited gall-coloured mucus twice. Pain in the right lumbar region radiating toward the bladder; no urine; no convulsions. Uræmia began to set in, and it was determined, in order to avoid imminent death, to search for and remove the calculus.

An incision was made in the lumbar region from the end of the 11th rib to the crest of the ilium, and the muscles and deep fascia were divided until the fatty capsule of the kidney was reached. Then a second vertical incision was made from the lower end of the first, on a level with the crest of the ilium and extending backward. The capsule of the kidney was then divided, and it would have been an easy matter to remove the kidney, which could not, however, for obvious reasons, be done. In order to reach the pelvis of the kidney and the ureter, the anterior surface of the kidney was freed from the capsule, and the stone which obstructed the ureter was felt to glide back into the pelvis; at the same time urine followed from the bladder. The calculus was then removed by being again forced into the ureter and the latter cut open over it. The stone was smooth, elongated, and about the size of a pea. Four other calculi were detected in the pelvis of the kidney and extracted. The wound of the ureter was sewed by means of three silk sutures, the ends of which were left to hang out of the external wound.

10th. Morning, temperature 36.6°, pulse small and frequent. The dressings are saturated with urine. Noon, temperature 38.0°. No urine per vesicam but has passed through wound. Some nausea, but less than yesterday. Evening, temperature 38.5°.

11th. Temp., morning, 38.1°. Evening, 38.3°, a little stronger; nausea continues.

12th. Temp., morning, 37.6°. Evening, 38.3°. Urine escapes through wound.

13th. Rigor during the night 40.8°. No urine in the dressing. The sutures of the ureter are cut, as is the ureter, and the latter was fixed in the lumbar wound by means of sutures. The patient was still alive on the 12th of March, and the wound, which for some days did not look well, presented a clean appearance.

The condition, as detailed, is no doubt rare; but even in those cases in which a ureter is plugged by a calculus, even though the other kidney performed its function, and the urine from it flows into the bladder, it is advisable to perform nephro-lithotomy in order to save the other kidney.—*St. Louis Med. and Surg. Journ.*, May, 1882.

Floating Kidney.

A careful and learned study of "Floating Kidney," a subject of great general interest, has lately appeared from the pen of Dr. LEOPOLD LANDAU.¹ The frequency with which "so-called movable kidneys" are observed in the living subject, and the rarity with which they are seen in the dead-house, have induced some to question their reality; while personal experience of one or more cases in which they have led to more or less serious symptoms has lately induced others to advise their removal on small provocation. The frequency of their occurrence in women is a point which certainly requires explanation. All the bearings on this subject are dealt with in a treatise of some hundred pages.

In discussing the mechanism of the displacement, the author considers the normal fixation of the kidney, and lays much stress on the intra-abdominal relations of pressure, pointing out the interesting fact that, although the kidneys generally remain *in situ* on opening the abdomen, and raising the body upright, by means of their attachments, in some cases they become more or less dislocated, as was pointed out by Sappey. The cases in which diagnosis of a movable kidney during life has been followed by a *post-mortem* discovery of the kidneys *in situ* by no means disprove the correctness of the diagnosis, considering that the kidney, which can during life be pushed into its normal place, may sink there in the recumbent position after death, and become fixed by the setting of the fat round it. Seventeen autopsies of dislocated kidneys are given. The etiology is to be found by referring to the forces which normally fix the kidney; these are two in number: the arrangement of the attachments of the kidney and the intra-abdominal relations of pressure. Whatever disturbs either of these favours dislocation. The commonest of these predisposing causes are emaciation, abscess in the neighbourhood, and loss of firmness and elasticity in the abdominal walls. The exciting causes may be jerks or the traction of viscera (especially the colon) in a belly more or less pendulous; but we cannot follow the author in including such firm pressure as bearing down of all sorts. The connection of hydronephrosis with movable kidney is obvious, and is borne out by numerous facts; the connection of hydronephrosis with pelvic tumours, with pelvic cicatrices, and with procidentia uteri has been observed, but our author includes flexions of the non-pregnant uterus, and refers to two cases, which, he says, "convincingly prove" this. We have referred to one of these, and find ourselves less convinced than before, the case not having furnished an autopsy, and the relation of one condition to the other being based upon pure theorizing. The other we cannot find in the medical libraries of London.

Dr. Landau discusses the corset and acquits this popular scapegoat. With regard to the frequency of right-sided affection, he finds the explanation of this in the firmer attachments of the left kidney, which are considered principally in connection with those of the colon, but also of the duodenum and pancreas. The symptoms are regarded from the point of view of the nervous, vascular, digestive, and urinary systems. Under the first the increased pain in movable kidneys at the menstrual period is brought into relation with the "aching kidney" of Duncan. A remark is made, which seems to us wise and most pregnant, with regard to all alleged mutual pressures of neighbouring organs, a force constantly invoked for the explanation of pelvic symptoms, that the kidney has not *weight* but *specific gravity*, an expression to be understood, of course, not with reference to water but to the intra-abdominal pressure, and to be remembered in the case of all internal organs. The phenomena of strangulation ("Einklemmungsersehei-

¹ Die Wanderniere der Frauen, von Dr. Leopold Landau. Berlin, Hirschwald, 1881.

nungen") in a floating kidney meet with the attention they deserve. The German name has not, to our knowledge, an exact English equivalent in use. The symptoms usually follow exertion or quick movement, and consist of severe pain, collapse, vomiting, high-coloured and scanty urine, sometimes containing blood, some fever, together with the rapid growth of a large dull tumour in the region of the floating kidney. The symptoms increase in from four to six days, the tumour disappearing in one or two weeks. The first sign of recovery is the plentiful secretion of urine of low specific gravity. These phenomena are referred by the author to torsion, or angular flexion of the renal vessels, especially the renal vein; and this view is illustrated by diagrams of actual experiments. The favourable termination of these cases is explained by the fact that, even if the torsion or angular flexion is not obliterated, a collateral circulation is established, even after ligature of the renal vein. This view is supported by a *post-mortem* observation by Mosler. It covers the connection between movable kidney and hydronephrosis, either temporary or permanent, a connection supported by facts. It can be easily understood how obstruction by flexion of the ureter may be relieved by the supine decubitus, especially if tension be diminished by aspiration. The author lays stress on the untrustworthiness of percussion in the diagnosis of movable kidneys, and gives cases where no difference could be detected between the two sides, even after excision of a kidney; a remark of Skoda's, that resistance rather than resonance is to be relied on in percussing the kidney, points in the same direction. The author ventures to assert that auscultation will detect a whistling murmur in cases of torsion of the vessels, a supposition which the analogy of ovarian tumour with twisted pedicle does not as yet confirm. A floating kidney not very uncommonly disappears permanently, in other words becomes fixed again. It is easily intelligible that if emaciation (especially where rapid) and relaxation of the abdominal walls can produce luxation (as happens sometimes after childbirth), rest in the supine position, together with the production of fat, may fix the kidney in its place again. The author's experience leads him to disapprove of all special contrivances for keeping the kidney in position, and to prefer a good broad bandage, but especially the much-abused "swan-bill corset!" All such contrivances, of course, can only be palliative. With regard to the proposed extirpation of uncomplicated floating kidneys, the author makes a remark whose scope is by no means limited to this affection: "The fact that a patient, immediately after extirpation of a floating kidney, feels better and suffers no inconvenience from the floating kidney is no more astonishing than that a woman no longer suffers from menorrhagia after removal of the healthy ovaries or uterus. . . . The amputation of a normal cervix uteri or the removal of healthy ovaries, perhaps the cause of dysmenorrhœa or some other slight suffering, is not to be justified; how much more unjustifiable is the extirpation of an organ so essential to life as the kidney?" In discussing the treatment of hydronephrosis the author prefers the establishment of a fistula to extirpation, on the sensible ground that, apart from the increased risk of the latter operation, the discharge from the fistula is found to become more and more urinous, proving the partial recovery of function by the remainder. Besides, even if we are sure that the other kidney is healthy, experience shows that two kidneys are not one too many for an individual, and that many would be glad of a larger allowance. Eight personal observations are given of the greatest interest, for which we must refer our readers to the original, only here remarking that in two cases pressure on a right kidney caused pain in the *left* lumbar region, an observation very instructive to the gynecologist, who often finds the same phenomena in connection with the ovaries. The paper ends with a list of 45 cases, from which, on analysis, we find that 11, or about 25 per cent., had pen-

dulous belly; 6, or about 13 per cent., had descent of uterus or vagina; 3, or about 7 per cent., had hernia; and 7, or about 15 per cent., had "retroflexion" of the uterus. Displacements of the uterus are frequently mentioned by the author, but he never uses any word but "retroflexion." If these proved to be cases of retroversion with descent, with or without retroflexion, all the above women, twenty-five in all, or more than 55 per cent., suffered from diseases associated with disturbance of the intra-abdominal relations of pressure—a most pregnant fact.—*Lancet*, April 22, 1882.

Floating Kidney in the Female.

There is a great diversity of opinion as to the pathological importance and therapeutic indications of floating kidney. The majority of clinicians regard them as anatomical curiosities, and of no clinical moment; lately, however, KEPP-
LER claims that a floating kidney is a continual menace to the life of the patient, and that the danger should be removed, as soon as detected, by the extirpation of the organ. Landau, in his work on this subject, gives us an analysis of forty-five cases, and arrives at conclusions opposed to those generally held. He believes, with great probability, that a movable kidney often escapes detection, or may be wrongly interpreted. It occurs generally in women between the ages of 30 and 40 years, from special predisposing causes, or from displacement by tumours, rapid diminution of fat in acute diseases, or relaxation of the abdominal walls after gestation. Habitual constipation may also be an exciting cause of displacement of the kidney, or the downward displacement of all the abdominal viscera from tight lacing may drag the kidney from its normal position. Among other exciting causes are mentioned prolapse of the genital organs, hydronephrosis and abnormal laxity of the perinephritic tissues.

Instead of explaining the symptoms as due to torsion of the renal vessels, and a consequent disturbance of the renal circulation, Landau believes that they are dependent on the varying facilities of excretion depending upon the different degrees of torsion or flexion of the ureters.

This is the most satisfactory explanation of the colicky pains and hydronephrosis often accompanying movable kidneys. Palpation furnishes the most reliable means of arriving at a diagnosis. Landau believes that a movable kidney in no way threatens life, and that as spontaneous cures often occur, nephrectomy is not a justifiable operation, especially since of the six cases, thus operated on up to the end of 1880, three were fatal.

In order to render the kidney immovable, Landau employs a corset descending to the pubes, and electricity, massage, and sea-baths to increase the tone of the abdominal walls. Complications are not regarded by Landau as generally fatal, and he only recommends expectant treatment.—*Journ. de Méd. de Paris*, April 1, 1882.

Palpation of Vesical Calculi in Children.

In No. 11 of *Centralblatt für Chirurgie*, RICHARD VOLKMAN contributes the following concerning the diagnostic value of rectal examinations in cases of vesical calculi in children:—

The value of a rectal bimanual examination in children suffering from stone in the bladder is recognized by all. The examination is made whilst the patient is thoroughly under the influence of an anæsthetic, with complete relaxation of the abdominal parietes and the bladder but slightly distended or empty. Two fingers of the left hand are carried as high up into the rectum as possible; the right hand presses upon the abdomen above the symphysis and forces the bladder

downward toward the rectum until both hands meet. In children the whole bladder can be palpated by this method, and even small calculi are readily detected. It requires considerable practice and experience, however, to determine the size of the stone, although it can be distinctly felt and moved about between the fingers of both hands, and at first he was often deceived concerning the size of the calculus; usually he considered the stone smaller than it proved to be after being extracted.

Of late, he has found, however, that there exists a yet more certain method to determine the size of a calculus in children by direct palpation. By means of the fingers of the left hand, which have been introduced into the rectum, and guided by the right hand which rests upon the abdomen the stone is lifted upon the os pubis and held there. It is an easy matter then to completely encompass it, and to allow those about to handle it. If the calculus is not too large, it is possible to raise it, together with the skin of the groin, so high as to tie it with an elastic ligature. He does not mention this, however, to suggest the elastic ligature as a method of removing vesical calculi, but because it may be possible to utilize it in such movable tumours of the bladder as are observed in pediculated papillomata and myomata.

In the last four cases of stone in children which came under his observation he succeeded very readily and without exception in dislocating the calculus upon the os pubis and in encompassing it with his fingers. The last stone which he palpated in this manner was as large as a chestnut.

In adults this manipulation can, of course, be performed only in spare subjects with thin abdominal walls.—*St. Louis Med. and Surg. Journ.*, May, 1882.

— *Tumour of the Bladder in the Male successfully removed through Perineal Section.*

At a meeting of the Royal Medical and Chirurgical Society, held April 11th, Sir HENRY THOMPSON reported the following case: Thomas R., aged 29, consulted Sir H. Thompson on July 26, 1880. Eight years previously he had passed "a piece of gravel of the size of a pea." After this he felt nothing unusual until 1877, when his micturition became more frequent, and was followed by pain in the end of the penis; also, occasionally, blood appeared in the urine, especially after exercise. The patient was sounded, and a small calculus was found. On August 5th, Mr. Bailey gave ether, and Mr. Furber, who had seen R. previously, was present at the operation. It was a small oxalate of lime calculus, and was easily crushed and removed. Very little improvement followed the operation. The bladder was not quite emptied by the natural efforts; the gum catheter was used daily, and on two occasions gave signs of the presence of something in the bladder, which a subsequent exploration with the lithotrite did not discover. Being relieved, he resumed his employment, and was occasionally seen relative to the still existing slight symptoms, which gradually increased. On October 5th, Sir H. Thompson examined the bladder, and removed a quantity of phosphatic deposit with the lithotrite. He then seized what at first felt like a calculus, and partially crushed it under pressure; but it was evidently fixed, giving an impression of partially impacted stone. More phosphatic matter being washed out, it was decided to watch the result for a short time, and to open the bladder if necessary. Accordingly, as after three weeks he had received very little benefit from the last operation, Sir Henry cut, as in median lithotomy, on the 6th November, 1880. Professor Paggi, of Florence; Dr. Seegen, of Vienna; and Mr. Ceely, of Aylesbury, were present. Having introduced his finger well into the bladder, and pressure being made above the pubes, Sir H. Thompson recog-

nized a tumour, about the size of a chestnut, growing apparently from the opposite wall or fundus, and somewhat to the patient's left, coated with phosphatic matter, and evidently the fixed body he had formerly seized with the lithotrite, and denuded of its sabulous covering. Taking a pair of small forceps, he adjusted them to a full and firm hold, and then twisted off the mass without difficulty; a small piece or two were subsequently withdrawn, but the tumour appeared to be entirely removed, and very little bleeding followed. He had no bad symptoms, made a rapid recovery, and speedily regained good health, never having had any return of symptoms since the operation. The patient was presented at the meeting, in excellent health, and quite free from all urinary symptoms. Regarding this and other cases which had afforded similar results, the author advised that, in certain cases of hæmaturia which was clearly vesical, and was not explicable, except by the hypothesis of impacted calculus or vesical tumour, an incision of the membranous urethra from the perineum, for the purpose of exploring the bladder, should be made. He proposed the incision ordinarily made in the median operation of lithotomy for the purpose of introducing the finger, and forceps if necessary, for research and removal when necessary. The symptoms were described, the possible presence of which generally indicated the necessity, or, at all events, the propriety of adopting such a proceeding. The tumour was examined by Mr. Stanley Boyd, of University College Hospital, and was found to be a simple fibroid.

Mr. JOHN MARSHALL said that it was evident that there must have been many cases of the kind in which an operation would have been useful; and Sir H. Thompson's case offered great encouragement for its performance. The diagnosis of tumours of the bladder, and the mode of operation and after-treatment, were important matters.

Mr. BRYANT approved of the operation adopted by Sir Henry Thompson, the theory of which had been yearly growing in favour. He had not had an opportunity of operating for tumour in the bladder, though the proceeding had suggested itself to him in three cases, in which hæmaturia and other symptoms were present. In one of the cases, the bladder was found, after death, to be full of villous growths. In the other two, there was cancer. Any operation would have been useless in these cases; but the records of surgery contained reports of many cases in which surgical interference would have been justifiable. A clean cut into the bladder, for the purpose of exploration, was not a severe matter, and was quite justifiable in cases which, without it, were evidently hastening towards death. Good results sometimes followed simple incision in inflammatory states of the bladder. As regards the kind of operation, the median was perhaps the best, where the prostate was healthy and the neck of the bladder sound; while, in other conditions, the lateral operation was to be preferred.

Mr. REGINALD HARRISON said that he had little doubt that the case described would give an impetus to operations on the bladder for other purposes than the removal of stone. He could remember the time when, if a surgeon, in performing lithotomy, found anything but a stone, he was looked on with suspicion. He asked whether median cystotomy was really the best mode of proceeding in a case of tumour involving the wall of the bladder. He had opened the bladder from every accessible part; and had always felt, that the median operation gave him least command over the parts, while the lateral incision gave most room. He thought that the danger of hemorrhage in the lateral operation had been rather overrated.

Mr. HENRY MORRIS asked whether an incision in the median line was not equally justifiable, when, though a cure could not be obtained, relief of pain and other symptoms might be afforded, as in chronic cystitis and tubercular cystitis.

He had lately met with an obstinate case of chronic cystitis, in which he had made an incision in the middle line of the perineum, with great relief to the patient, who, however, died at the end of seven weeks from suppuration of the kidneys. He preferred the median incision, because the wound had less tendency than the lateral to heal rapidly.

Mr. HOLMES said that opening the perineum for chronic cystitis was a different matter from the operation described by Sir Henry Thompson. It seemed that the great difficulty was to diagnose between tumours such as those in Mr. Bryant's cases, and chronic cystitis. He did not wish to cavil at the operation of opening the bladder in cases of tumour; he had himself contemplated its performance. When the sufferings of the patient were very great, and the presence of a tumour was indicated, an operation for its removal was justifiable; but where the symptoms were acute, and the growth was making rapid progress, the operation should only be undertaken at the urgent request of the patient's friends. Cystotomy, for the relief of chronic cystitis, was an established operation. He thought that there was no difficulty in keeping the wound open after the lateral incision; and this appeared a better means of reaching all parts of the bladder than the median incision.

Mr. BERKELEY HILL said that cases where a tumour in the bladder could not be dealt with were probably not so numerous as was supposed. The fate of all cases of tumour of the bladder seems so certain, that it would not be right to be deterred from operating by fear of hemorrhage. An opening should be made at once, whenever there appeared any reason to suppose a tumour to be present.

Mr. PEPPER had seen five cases of operation for tumour in the bladder. The first case was that of a female child at University College Hospital, under Mr. Marshall. The child died; and the bladder was found to be filled with a mass of gelatinous polypi. In the second case, there was an enlarged middle lobe of the bladder, which was excised before removing a stone; the man died. The three other cases were at St. Mary's Hospital. Two of the patients died: one from hemorrhage, and one from pyæmia; and the third had an incurable fistula left after the operation. He asked Sir Henry Thompson what would be the best mode of operating on the female bladder. The choice of operation would depend on the character and structure of the tumour.

Mr. GODLEE asked whether actual examination gave an aid to diagnosis.

Mr. J. MARSHALL said that cases of tumour of the female bladder stood entirely apart from those of the male bladder; rapid dilatation of the female urethra enabled the bladder to be readily examined. Encouragement to operate on tumours in the male bladder was afforded by the fact, that the deaths after the operation in males were not more numerous than those in females. In the diagnosis, the age of the patient must be taken into account. The movable tumours (fibroid and polypoid) occurred in children and middle age; cancerous and villous growths later in life. As regarded the operation, some surgeons might prefer one to the other; but the lateral incision seemed to have been generally chosen; it was used in all the successful cases. In most of the unsuccessful cases, the growths had been pedunculated; and, in all the successful cases, the patients had gone on remarkably well, without hemorrhage or other unfavourable symptoms.

Sir HENRY THOMPSON would define the conditions on which operations for the removal of vesical tumours should or should not be performed. There had been great want of clearness in the definition in the successful cases; prostatic outgrowths having been often confounded with tumours of the bladder, from which they were totally distinct. No case of malignant tumour should be operated on; but it was difficult always to identify such tumours. This might be done by rec-

tal exploration, when an irregular hard mass would be felt, especially when pressure was made on the bladder from above. Still the diagnosis was difficult. He would not operate in such cases, nor in villous tumours. He had desired to bring under notice the propriety of making an incision through the perineum in proper cases. Incision was a very simple matter, and often gave much relief; and it was indicated in other conditions besides tumour of the bladder. He believed that there was no difficulty in exploring the whole interior of the bladder by the finger through either the median or the lateral incision, unless in very stout persons. The patient should have an anaesthetic, and an assistant should make pressure above the pubes. In a case of obstinate vesical hemorrhage, he made, two months ago, an incision, and removed a small flake of phosphate from the bladder; since that time there had been no return of the hemorrhage. He had also operated three weeks ago on a medical man, who, for the last year or more, had passed all his urine through a catheter. The patient believed that there was a calculus impacted at the neck of the bladder; but nothing of the kind could be found. An incision was made in the median line, and the mucous membrane of the bladder was found to be healthy. The patient was greatly relieved, and required to pass urine only seven or eight times, instead of fourteen or fifteen, in twenty-four hours. The operation was not cystotomy, but perineal section; and it was mostly all that was wanted. In lithotomy, it was not the incision that was dangerous, but the removal of the stone. He preferred median incision; but the mode of operating to which the surgeon had been accustomed was the best. He did not advocate opening the bladder in all cases of difficulty; he had only desired to point out where this might be done with advantage.—*British Medical Journal*, April 15, 1882.

The Operative Treatment of Phimosis.

Dr. LACLAVOIX believes that every case of congenital phimosis, on account of the numerous inconveniences which it entails, should be operated on. No operation should be performed for accidental phimosis in the acute stage, except in special conditions, but when it has become chronic, an operation is indispensable.

The different operative procedures may be divided into four groups: Incision, excision, circumcision, and dilatation. Simple incision should be nearly always rejected; excision is applicable to only few cases; circumcision should be generally employed. Dilatation should be rejected in cases of cicatricial phimosis, but may be successfully employed in cases of congenital phimosis, although even in these instances it is generally necessary later to excise a portion of the prepuce. Serre-fines are generally made use of to facilitate union, but sutures are equally as good.—*Bull. Gén. de Thé.*, April 30, 1882.

Treatment of Chaneroids and Chanerous Buboës with Salicylic Acid.

Dr. AUTIER believes that, without being a specific, salicylic acid can be of great service in these affections. He recommends that the ulcers should be carefully dried twice daily, and then covered with powdered salicylic acid; in the interval, they should be washed every two hours with a five per cent. solution of salicylic acid in glycerine, which should also be injected into the cavities of buboës. If the buboës have narrow openings, he recommends compression; otherwise they are to be covered with charpie soaked in the salicylic acid solution and maintained in position with a spica bandage. When the surface of the ulcers appears healthy, as is usually the case in a few days, the solution may be diluted

with two or three parts of water. The application of the powder should be continued until the wound reaches this healthy condition.—*Bull. Gén. de Thér.*, April 30, 1882.

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Destruction of Chancres as a Means of Aborting Syphilis.

Dr. PAUL SPILLMAN draws the following conclusions from an analysis of eight cases in which excision of the primary lesion of syphilis was practised:—

1. Even in cases where the excision seems to have been followed by successful results, it cannot be positively affirmed that the operation produced an abortive effect on the disease, as chancres apparently infective, which were not followed by secondary phenomena, have often been noted.

2. The operation of excision is not a dangerous one when it is accompanied by appropriate antiseptic precautions; cicatrization by first intention, and without any complication, usually rapidly occurs.

3. In certain cases it may be very difficult to excise the chancres without serious mutilation of the organs on which they are situated.

4. The evolution of syphilis, glandular enlargement, secondary symptoms, etc., is in no way influenced by the excision.

5. It has been claimed that the violence of the disease is diminished by excision; that the chancre is the seat of elaboration of the syphilitic virus, and that therefore its excision would serve to diminish the intensity of the affection. But the observation of two of the cases reported proves that excision, even when performed under the most favourable conditions, may be followed by the gravest form of syphilis.—*Ann. de Derm. et de Syphilog.*, Mar. 25, 1882.

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Wounds of the Theca Vertebralis, with Discharge of Cerebro-Spinal Fluid.

A paper on this subject by Mr. T. HOLMES was read at the meeting of the Royal Medical and Chirurgical Societies on April 25th. Referring to a case published in the sixtieth volume of the Transactions, in which a copious flow of limpid fluid took place from a wound in the back, and in which it was believed that the ureter was wounded, though it was also admitted as possible that the fluid might have been cerebro-spinal, the author relates two cases: one under his own observation in a patient of Mr. Rouse, at St. George's Hospital, the other from the *Lancet*, in which a similar copious discharge of watery fluid was caused by a wound of the spinal membranes, not involving any wound of the cord or large nerves, as proved in one case by post-mortem examination, and in the other by the position of the puncture. Such wounds do not of themselves produce any symptoms, the loss of fluid being gradual, and the fluid no doubt rapidly re-secreted. Inflammation around them may interfere with the functions of the cord or nerves, even to a fatal degree, and there seems some warrant for believing that the very sudden withdrawal of large quantities of the fluid (as in operation for spina bifida) may produce dangerous syncope.

Mr. HUTCHINSON alluded to the frequent and often copious and long-continued escape of fluid from the ear in head injuries without detriment; but had no facts to add as to wounds of the theca vertebralis. He had not seen immediately serious consequences following rupture or tapping of a spina bifida. Almost constantly, however, arachnitis follows rupture of spina bifida with a small opening; though he had seen one or two cases in which shrivelling of the tumour had ensued on what was described as a rupture of the sac. The liability to arachnitis following escape of the fluid would depend upon the kind of opening present.

Mr. T. SMITH concurred in the statement that the mere escape of fluid from a spina bifida is not followed by immediate ill effects; but if the flow last long,

inflammation is liable to follow. He had seen cases which had continued to leak for days. He had seen cases of death and cases of recovery after spontaneous rupture of a spina bifida; in the latter case the sac shrivels up. He once saw a case where a mistake in diagnosis had led the practitioner to make a long free incision into the sac; and to his (Mr. Smith's) surprise the child rallied from its state of depression, although it eventually died. The fluid is very rapidly re-secreted. As to treatment of the wounds described, there would be more chance of getting closure if treated at once; and the first case related by Mr. Holmes showed the difficulty there was in getting this result at a later period.

Mr. MORGAN had assisted Mr. Holmes in one of the cases referred to. It was that of an infant with a congenital tumour below the mid-dorsal region of a sausage shape, and pedunculated. Pressure had no influence on it; and it was, therefore, removed by an elliptical incision on either side; but when the incision divided the centre of the base of the tumour, the child became collapsed, was with difficulty restored, and died in twelve hours. Mr. Holmes thought the result due to carbolic acid poisoning; and the urine was certainly blackened. The symptoms so resembled another case lately under Mr. Morgan's care that they might both be attributed to the direct effect on the spinal canal. This was a case of a somewhat larger tumour, also pedunculated, and uninfluenced by pressure. It was tapped and cerebro-spinal fluid escaped, followed by immediate collapse, with temporary recovery. Morton's iodo-glycerine was injected into the sac, the pedicle being secured by a ligature, but death took place in a few hours. He was at a loss to explain these events unless from a direct action on the nervous centres. He knew of a case in which the midwife with a pair of scissors slit up the spina bifida without ill result. So that it seems there is more danger when the opening is small than when it freely communicates with the canal.

Dr. WHARRY suggested that the reason why tapping a spina bifida was not followed by immediate effects was possibly due to the rapid re-formation of fluid, and also to the subarachnoid trabeculae not allowing a very great loss to take place.

Mr. JOHN MARSHALL, referring to the subject of wounds of the theca, thought the diagnosis could be rapidly made. Probably in all these cases the presence of some inflammatory action altered the characters of the fluid so that it contained more solid matter than normal. The result may depend on the seat of the wound; if high, being more dangerous than if low down; and also upon the subject wounded. If the wound was quickly closed, there seems no reason why puncture of the theca should be so serious. The fluid has probably something more than a mere mechanical function. In a case of spina bifida in which he was about to inject iodine, the raising the child to a sitting position in order to safely inject the solution after drawing off six or seven ounces of fluid, produced syncope and a convulsive attack. Thus sometimes cerebral disturbance may be set up.—*Lancet*, April 29, 1882.

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Treatment of Fractured Thigh.

Dr. HERMANN KÜMMELL, of Hamburg, writes, in the *Berl. Klin. Woch.*, No. 4, 1882, that, for the treatment of fracture of the femur in an infant, the safest and most convenient and successful method is that of vertical extension. This method was first tried by Dr. Schede of Berlin, in 1877, and has since been carried out by this surgeon in all his cases of fractured thigh in children under two years of age, and also in some cases in which horizontal extension had failed with children between three and four. In horizontal extension, in addition to

the eezema and excoriation caused through the constant soiling of the bandages by excretions, and to the great labour attending frequent renewal of the bandages, especially when it is necessary, as in fracture through the upper third of the femur, to include the pelvis, there is the further evil of enforced frequent movement of the injured part, through which movement consolidation is retarded, and dislocation and shortening of the fractured extremity rendered probable results. In this method of treatment, a long continuous band of plaster is fixed to both sides of the injured limb, as high as the seat of fracture, and applied so as to form a free loop below the sole. This long strip is then secured in the ordinary way by circular strips of plaster and by circular turns of a bandage. The leg, having been elevated, is then kept in the vertical position, with the corresponding side of the pelvis suspended, by means of a piece of cord fixed to the loop of plaster, and either attached above to some object over the bed or slung over a pulley, with its free extremity supporting a weight. The fragments of the broken bone then fall into proper position, and remain so, if the extension be maintained until firm union is established. The little patients, it is stated, tolerate this treatment very well, and at once cease to suffer from pain in the injured thigh. Vertical extension does not necessitate constant and complete rest on the back; but Dr. Kimmell does not insist on this as one of the advantages of the method, as he is opposed to the view held by many surgeons, that prolonged rest on the back is dangerous with young patients, and that it causes pulmonary affections and disturbance of the general health. Rotatory displacement of the fragments is not to be feared as a result of vertical extension. In most of the cases observed by Dr. Schede and the author, callus has formed rapidly and in abundance; and in healthy children, it is asserted, consolidation of the fragments is usually well established by the end of the third week, when the bandage and strapping may be removed and the limb lowered. The usual result of this treatment is stated to be speedy and firm union, without displacement, and without any shortening of the injured limb. One disadvantage is mentioned as likely to occur in female infants subjected to this mode of treating fractured thigh. As a consequence of free entrance of air into the gaping ostium vaginae, the little patient may suffer from severe vaginal catarrh, which condition will persist as long as the vertical extension is kept up, but subsequently may be soon removed by careful cleansing and the local application of weak astringents. A tabular statement is appended of twenty-eight cases of fractured thigh in infants treated by this method. Of these patients, twelve were under twelve months of age, and sixteen between the ages of one and two years.—*London Medical Record*, April 15, 1882.

New Method of Treating Simple Transverse Fracture of the Patella.

Mr. LUND, of Manchester, read a paper on this subject at the meeting of the Medical Society of London, held April 17. On the assumption that the chief, if not the only, cause of non-union in such cases is imperfect apposition of the broken fragments, so that actual contact of the osseous surfaces is not attainable, Mr. Lund has adopted this plan: For the first six or eight days the limb is extended on a back splint with foot-piece, and slightly raised; cold evaporating lotion or ice is applied to the knee until nearly all effusion within and external to the joint has subsided. Then while the patient is under the influence of an anæsthetic, a strong steel pin is drilled through each portion of the patella, from the external to the internal border, a small hole being made in the skin by the entrance and exit of the pin, great care being taken by the mode in which the patellar fragments are pierced that the point of the screw-pin does not injure the articular surface of the bone. These screw-pins, which should be placed as

nearly as possible in parallel lines, are next drawn very closely together until the broken surfaces of the bone are brought into perfect contact by means of a double serew instrument which, for the time, holds them firmly in position; while so placed the ends of the pins are inclosed in a coil of very thin copper wire, so arranged in repeated turns as to gain great strength, and then, when the pins are completely fixed, the double-acting serew instrument is removed, the broken surfaces of the bone remaining in absolute contact. Mr. Lund demonstrated the method very clearly by using the knee-joint from an artificial leg in which the broken patella was represented by two pieces of cork kept apart by elastic bands and covered by a knee-cap to imitate the skin. He gave the particulars of two cases so treated with excellent results, and also a third case now under treatment at the Manchester Infirmary. Contrary to what might have been anticipated, these steel pins do not produce any local or constitutional disturbance, although retained *in situ* in the first case for 37 days, and in the second for 43 days, when good osseous (?) union was obtained.

Mr. ADAMS believed that often even ligamentous union failed, and only a periosteal fibrous union took place. A true ligamentous union would not stretch to a greater extent than an inch. He had obtained fairly successful results with Malgaigne's hooks, getting very short ligamentous union; and had never seen any ill results from their use, though such had occurred at King's College Hospital.

Mr. ROYES BELL said the patient alluded to by Mr. Adams was a middle-aged woman in broken health. Erysipelas set in about the punctures of Malgaigne's hooks, and suppuration extended into the joint, causing death. In a case of his where ligamentous union took place, the patella was subsequently fractured in another place, the ligamentous union remaining intact. In a case of double fracture one patella was treated with, and the other without, Malgaigne's hooks. The union obtained by the hooks was better than that without them.

Mr. H. MORRIS ascertained from Mr. Royes Bell, that the fracture treated without Malgaigne's hooks was considerably anterior to the other, and he thought that this might account for the superiority of the latter. He asked what kind of union Mr. Lund believed himself to have attained. He believed a close ligamentous union to be superior to an osseous, and pointed out that the method advocated by Mr. Lister had been practised by other surgeons previously with success, and that Mr. Lister did not claim its invention.

Mr. B. SQUIRE thought Mr. Lund's rods would probably promote the formation of callus.

Mr. BRYANT would prefer Mr. Lund's method to that of opening the joint, if either was necessary. Mr. Lister only recommended his plan in apparently desperate cases, and in such rare cases, he (Mr. Bryant) would prefer Mr. Lund's method. The ordinary methods, in his experience, had produced very good results, and some of the patients were able to follow the occupation of porters, bargees, etc. He pointed out the risk of injury to the articular surface of the bone in Mr. Lund's operation, and had not a favourable opinion of Malgaigne's hooks.

Mr. LOCKWOOD advocated Mr. Manning's plan, as adopted at St. Bartholomew's Hospital.

Mr. GANT treated fractured patella by semicircular pieces of gutta-percha placed round the limb above and below the patella, and kept in apposition by Malgaigne's hooks, aspirating the joint if much effusion was present. The interval between the fragments on leaving the hospital was about a quarter of an inch, and although it often became increased the utility of the limb was not lessened.

Dr. DOWSE suggested division of the rectus to aid the apposition of the fragments.

The PRESIDENT said he had found the results of the ordinary treatment to be satisfactory. In bad cases he had used a method of bringing the fragments together by pins.

Mr. LUND, in reply, said that Malgaigne's hooks were apt to cause tilting of the fragments. In one case he thought he obtained bony union. Very little irritation was caused by the rods, and no callus was induced. He would only use his method in recent fractures, and not in broken constitutions. He had seen very satisfactory results from section of the rectus muscle. Its advantage over Malgaigne's was that the former brought pressure to bear on hard tissues, and the latter on soft tissues liable to suppurative inflammation.—*Lancet*, April 29, 1882.

Aneurism of the Left Axillary Artery; Ligature of the Subclavian; Rupture of the Sac; Amputation at the Shoulder-joint; Recovery.

At the meeting of the Clinical Society of London, held March 10th, Mr. HOWARD MARSH read notes of this case. The patient was a carman, aged 32. He had never had syphilis, nor any serious illness. Eight weeks before admission, he found a small pulsating swelling in the armpit. This rapidly increased, and, when he came to the hospital, measured nineteen inches over its most prominent part. There was great œdema of the whole limb. No pulse could be felt at the wrist. After the patient had been at rest for three days in bed, the subclavian was tied, under the carbolic spray, with a silk ligature, the ends of which were cut short. The case progressed favourably for three or four days, but then the swelling gradually increased in size, and on the seventeenth day hemorrhage occurred from the sac. This having recurred on the eighteenth day, the swelling was laid open, with the object of tying which ever proved to be the bleeding end of the artery. As, however, a gush of arterial blood immediately occurred, and as the patient was still in a very exhausted state, it was thought best to amputate at once at the shoulder-joint. The patient made a favourable recovery. The author remarked that the cause of the aneurism was probably a small rupture of the coats of the axillary artery, resulting from a strain. The case was a good illustration of the usual features of aneurism in the axilla, in respect to its rapid increase, the large size the swelling might attain, and the tendency of the sac to rupture. Ligature of the subclavian—the method of treatment most often successful—seemed to offer the best prospect of cure. It failed through the free establishment of the collateral circulation. Had the patient been in a less exhausted condition, the limb might perhaps have been saved by Syme's operation, even when the sac had given way; but weak as he was, amputation seemed the safer expedient. The silk ligature, after it was thrown off, travelled toward the surface, and could at one time be felt close beneath the skin, and a small shred was discharged through the wound. How it was afterwards disposed of was not known. It never, however, was observed to escape externally. The silk ligature, the author thought, was unsafe, as it was apt to act as a foreign body, and so to provoke a dangerous process of ulceration in the neighbourhood of the artery. He should, on any similar occasion, employ the kangaroo-tendon ligature, which, so far as present experience had shown, was perhaps the most reliable form now in use.

Mr. GOLDING-BIRD suggested that silk should always be soaked in wax, and never in oil. It was curious that in this case a portion of the silk had been removed.

Mr. MARSH thought the ligature had cut through and had been found as of old, but only a shred remained.

Mr. C. HEATH was loath to criticize a case which he had not seen, but it seemed that there had been a doubt as to whether the aneurism had given way. When the vessel was ruptured, then it was surely the recognized practice to open the sac and tie both ends of the vessel. This was what was done in Mr. Syme's well-known case; still, it had been contested by surgeons of eminence. It was best, however, to obtain complete control over the subclavian in the first instance.

Mr. BARWELL thought that in all probability the aneurism had given way. He should have liked to know something about the temperature. The danger of tying vessels in their continuity was now greatly lessened by the use of animal ligatures.

Mr. MORGAN asked what was the condition of the limb itself when removed.

The PRESIDENT considered that the aneurism had in this case given way, but even then he did not think that ligature of the main artery was hopeless. He had himself, in two cases of diffuse popliteal aneurism, cut down in Scarpa's triangle, even through clots, and tied the femoral. This procedure was far more likely to be successful than groping about among clots for the ends of the ruptured vessel. The case recorded afforded another example of carbolized silk making its way through the vessel. It was this that originally made him think of catgut. For his own part, he would not use oil or wax, but only carbolized water, for silk; still, he preferred animal ligatures. He had again turned his attention to this, and he had found catgut prepared with water alone worse than that prepared by sulphurous acid. After use, it showed more superficial infiltration. But he had found the best to be that prepared in chromic acid and sulphurous acid. This might be dried, and was ready for use at any time by simply putting in carbolized water.

Mr. MARSH, in reply, said that when the case occurred this was the best ligature he could get. No doubt ligature of the subclavian had cured axillary aneurism; and then the man, when seen, was sinking. Should he come across another case, he would tie the vessel first again.—*Brit. Med. Journal*, March 25, 1882.

Popliteal Aneurism.

Prof. BARDELEBEN reports, in the *Berliner Klin. Woch.*, No. 1, 1882, a case of popliteal aneurism, and adds some remarks of interest on the treatment of the affection, which seems to be of much less frequent occurrence in Prussia than in this country. The subject of this case was a working tailor, aged 46, who complained, for the first time, of pain and stiffness behind the right knee, in May, 1880. One month later, he noticed pulsation in this region, and four months later observed a distinct tumour. At the end of the year he came, as a hospital patient, under the care of Professor Bardeleben. There was then seen in the right popliteal space an elastic pulsating tumour of the size of a man's fist, which diminished in size and ceased pulsating on compression of the femoral artery. No history of injury could be made out. The patient seemed to have been quite free from syphilitic disease and from rheumatism; the heart was clearly quite normal, and no indications of vascular disease were presented by the radial, temporal, or posterior tibial arteries. The tumour was attributed by the man himself to his habit of always standing when at work.

In the treatment of this case, the affected limb was first fully flexed at the hip and knee, and occasional digital compression was applied to the femoral artery.

This plan was kept up for four days, during most of which period the pulsation in the aneurism was arrested, but had to be discontinued in consequence of much œdema in the foot and leg, and also of sloughing over the heel. The next attempt consisted in applying instrumental compression to the femoral artery. The vessel was readily controlled by pressure of this kind without any complaint from the patient of pain or even uneasiness, but in the course of twenty-four hours gave rise to sloughing of the skin. This result followed the application of a tourniquet first below Poupart's ligament, secondly, above this ligament, and again in the middle third of the thigh. A subsequent attempt to treat the aneurism by the application of an elastic bandage to the limb, and of Esmarch's ligature above the knee, caused much pain, and was followed by sloughing of the skin over the instep, and also by a sudden attack of peculiar mental and nervous disturbance, in which the patient attempted to commit suicide. As it was found that pressure invariably caused sloughing, and as no progress had hitherto been made towards cure of the aneurism, Professor Bardeleben decided on applying a ligature to the femoral artery on Scarpa's triangle. The material employed for this ligature was carbolized catgut, and the operation was performed under strict antiseptic conditions. The wound was dressed antiseptically, and, notwithstanding the proximity of the sloughing sores that had been caused by compression, it healed in the course of eleven days, without the discharge of a single drop of pus. The patient made a speedy recovery, without fever or any other bad symptom; and, although on the third day a large pulsating vessel was observed on the inner side of the knee, and the temperature of the limb during the first two days after the operation did not fall, but rather increased, the aneurismal tumour became hard and small, and soon disappeared, without any return of pulsation. It was noticed, very soon after the application of the ligature, that, whilst the inner side of the thigh had become anæsthetic, the outer side preserved its sensibility. This, Professor Bardeleben thinks, was probably due to the fact that the arterial supply of the outer part of the thigh is derived from the profunda.

In some remarks on this case, Professor Bardeleben states that there was, without doubt, a peculiar tendency in the patient's skin to become gangrenous on the application of even slight pressure. The man did not suffer from diabetes, but the fact of a few small doses of iodide of potassium, administered at an early stage of the treatment, having suddenly caused an eruption over the whole surface of the body, indicated some abnormal condition of the skin. Such condition, as shown by the sudden dilatation of the small cutaneous vessels through the action of an internal irritant, might, it is suggested, have been the origin of the impairment and loss of vitality in the skin, caused by such pressure as would not have had such bad results if applied to the skin of other subjects. In discussing the rival claims of deligation and external compression in the treatment of popliteal aneurism, Professor Bardeleben gives it as his opinion that, though the risks attending the cutting operation may be much reduced by carrying out Lister's antiseptic method, it is better to have recourse to that plan of treatment, which, from its not necessitating any division of skin, is of an antiseptic character. Compression, however, ought not to be carried too far in unfavourable cases; and, when it is clear that the affected limb will not tolerate such treatment, the surgeon should at once resort to antiseptic deligation.—*London Med. Record*, April 15, 1882.

Angioma Communicating with the Jugular Vein.

At the meeting of the Société de Chirurgie, on May 3, M. Farabeuf read for M. Reclus an account of a case of cavernous angioma communicating directly with the jugular vein. On the same occasion M. DESPÈRES also reported a similar

observation made on a child who came to the Cochin Hospital with a soft and irreducible tumour on the neck three fingers' breadth below the lower jaw. It was intended to make an exploratory excision, but believing it to be a cyst, it was opened with a bistoury, when a jet of blood escaped, which was, however, controlled and union by first intention took place. After a few days phlebitis occurred, and proved fatal. The autopsy showed that the tumour communicated by a single venous trunk with the jugular.—*L'Union Méd.*, May 9, 1882.

OPHTHALMOLOGY AND OTOTOLOGY.

Surgical Treatment of Granular Ophthalmia.

BRACHET (*Receuil d'Ophthalmologie*, Feb. 1882) strongly advises the adoption of the surgical treatment employed by Galezowski in many cases of granular ophthalmia, namely, the removal by means of the scissors of the whole of the conjunctiva from the upper and lower culs-de-sac, followed by a few applications of mitigated caustic to the lining membrane of the lids. This treatment is rapid in its effects, and, as compared with other methods, is of very short duration; it insures a complete cure without danger; it saves the cornea from the serious complications which attend the prolonged use of caustics, and it enables the cornea to recover its transparency and polish. It succeeds where other treatment has failed.

Galezowski, by whom the operation was introduced some years ago, is stated to have performed it more than two hundred times, and always with success.

During a sojourn of three years in Algeria, the writer gained a wide experience of granular ophthalmia, and of the little real benefit obtained by treating it with sulphate of copper and similar applications. In proof of the value of the surgical method, he relates the history of two sufferers from this disease who were operated on in 1873 by Galezowski, and adds a description of their present condition. The one patient had suffered since infancy, and had never been treated; the other had suffered for two years, and had been laboriously treated at more than one ophthalmic clinique without permanent relief; neither was able to follow any employment. Excision of the conjunctiva, followed by a few applications of mitigated caustic, effected a permanent cure with restoration of corneal transparency. At the present time, eight years after the operation, vision is excellent; the culs-de-sac are wanting; the conjunctiva passes immediately from lid to globe in vertical cicatricial bands or folds, which in some places join the globe at the distance of one em. from the corneal margin; the eyelids are intact and well furnished with lashes; the lachrymal apparatus in each case performs its functions normally; the movements of the eyes do not appear to be hindered in any direction.—*Ophthal. Rev.*, May, 1882.

Sclerotomy for Glaucoma.

At the last meeting of the Ophthalmological Society, the President, Mr. BOWMAN, announced that a discussion on sclerotomy would be held on June 8th. This operation, we may remind our readers, has been strongly recommended in recent years as a substitute for iridectomy in glaucoma. In 1867, the operation was foreshadowed by Weeker, who held that if, in iridectomy for glaucoma, an incision could safely be made in the sclerotic without removing any iris, that

would be the best course. In the following year, Stellwag carried this advice into practice in two cases. The theory upon which the operation was recommended and performed was, that the efficacy of any operation for glaucoma depended on the interposition between the lips of the wound of a layer of new and more porous tissue, and that such a layer was only to be obtained when the scar lay in the sclerotic. This, which came to be known as the "filtration scar" theory, was severely criticized by Schweigger; and at the International Congress in London last year, Professor Schoeler reported experiments on animals which appeared to disprove it. The operation itself has varied much in the hands of different surgeons. Stellwag, and later Quaglino (*Annal. d'Ocul.*, 1871) made a peripheral wound with an iridectomy knife; Wecker performed a subconjunctival operation, and, fearing prolapse of the iris, left the central third of the sclerotic undivided. In England, the first writers on the subject were Messrs. Bader (*Ophthalm. Hosp. Rep.*, vol. viii.) and Spence Watson; the latter, in a paper read before the Clinical Society in 1876, advocated its employment in acute glaucoma; but, as a rule, operators seem to have confined the operation to chronic glaucoma in its various forms. A very full summary and bibliography of the subject have been published by Mauthner in Knapp's *Archives* (vol. vii.). It is proposed in the discussion to deal, firstly, with the various manners of performing the operation; secondly, with the forms, stages, and complications of glaucoma to which the several methods of performing the operation are applicable; and, thirdly, with the *rationale* of the treatment. Should such an explanation be forthcoming, it would no doubt throw much light on the former heads of the discussion.—*Brit. Med. Journ.*, May 20, 1882.

Affections of the Eye from Disturbed Circulation in the Carotid.

Dr. JUL. MICHEL (Wiesbaden, 1881) has found that if a carotid artery be compressed in man, a paling of the papilla of the corresponding side, a fainter column of blood in the arterial vessels, and a diminution in width of the venous retinal vessels may be observed for a short time. This stage passes quickly, and great venous stasis and absence of venous pulsation show themselves. A similar venous stasis of the retina is visible when one arm is stretched upward. Ligation of one carotid is followed, immediately after the operation, by complete arterial and venous anæmia; later, by filling of the collateral channels; but a venous hyperæmia persists on account of the diminution of arterial pressure. This alteration is observed in the eye corresponding to the ligated carotid. In the venous system of the side opposite to the ligated vessel, a stronger rhythmical pulsation can be seen. Atheroma of the carotid is in intimate relation with opacities of the lens; the so-called senile cataract, as well as unilateral cataract with unknown cause, finds in this a satisfactory explanation.—*Arch. of Ophth.*, March, 1882.

A New Mydriatic.

Dr. EMMERT, of Berne (*Correspondenz-blatt*, Jan. 15) has made a series of experiments on the pupil-dilating powers of hydriodate of hyoscin, a crystalline salt obtained by treating hyoscin with hydriodic acid. Hyoscin is an alkaloid obtained from amorphous hyoseyamin. The results showed that the new salt acted more energetically and more rapidly than either sulphate of atropia or duboisin. The solution need not be stronger than 1 : 1000, and even then is more active than the half-per-cent. atropia-solution. It is also less poisonous than the latter. Even at its present price, which will naturally be reduced if the drug becomes better known, it is a cheaper, as well as a stronger, mydriatic than atropia.—*Practitioner*, 1882.

MIDWIFERY AND GYNÆCOLOGY.

Landmarks in the Operation of Laparo-Elytrotomy.

Dr. WILLIAM M. POLK, Professor of Obstetrics in the University Medical College, New York, recently demonstrated certain anatomical points bearing upon the operation of laparo-elytrotomy, before the New York Obstetrical Society. The remarks made by Dr. Polk on that occasion appear in an amplified form in the May number of the *New York Medical Journal and Obstetrical Review*. The specimen shown, taken from the body of a woman who had been murdered in the seventh month of pregnancy, was a dissection showing the relations of the pelvic contents during the latter part of gestation, and especially the course of the ureter. Practising the operation upon this and other eadavers, the author has found that the ureters do not follow the pelvic wall to a point near the ischial spine, as in the non-pregnant condition, but that, crossing the pelvic brim at the common iliac bifurcation, the left just behind, the right just in front of, that point, they descend into the canal to the brim of the bony pelvis, the point being about the synchondrosis. In this course they accompany the internal iliac artery, the right in front of the vessel, the left crossing it obliquely. Reaching the bony brim (the ilio-pectineal line), they leave the pelvic wall, emerging from beneath the base of the broad ligaments (in pregnancy about on a level with the pelvic brim, and carried back on a line with the synchondrosis), and take a course downward, forward, and somewhat inward, passing about midway between the pelvic wall and the cervico-vaginal junction, but approaching very closely the antero-lateral wall of the vagina, as they turn more decidedly inward, on a lower plane, to strike the base of the bladder three-quarters of an inch below the cervix, terminating in the bladder at a point (the subject being on the back) just two inches below the spine of the pubes. A line drawn from the bifurcation of the common iliac to the spine of the pubes corresponds in the main to the line of the ureters. Along this line they have the following relations to the pelvic brim (in the recent state): At the bifurcation, half an inch below, at the extremities of the transverse diameter of the pelvis, about an inch; and at the spine of the pubes two inches below. As a whole, the tubes in the pelvis are situated upon a higher plane than in the non-pregnant condition, having been carried slightly upward while being separated from their close relations with the pelvic wall by the ascending uterus. How far they may be elevated in a case of extreme pelvic deformity with a pendulous abdomen, and the uterus correspondingly displaced, the author is unable to say, but thinks it probable, that the bladder being empty and not dragged upwards, thus preserving the normal position of the vesical end of the tubes, the displacement would not be such as to bring any part of them much above the points indicated.

Another matter which Dr. Polk took occasion to investigate was the ground of the objection to operating upon the left side. In view of the strong probability that the operation can be done on the same side but once, this, he remarks, is a very important question. He did the operation upon the left side, the vessels being injected with plaster and the rectum distended. He found that the rectum offered no such obstacle as is commonly supposed, and that the operation was as feasible upon one side as upon the other. After the operation the organ was carefully examined, and found in no way disturbed. In looking at its position this was readily accounted for; it lies behind the broad ligament. In entering and leaving the pelvic canal we cross the brim between the base of the broad ligament and the posterior surface of the bladder. This latter is about on a line

with the ilio-pectineal eminence, while the former is as far back as the synchronosis; here is ample space for manipulation and extraction.

The important structures that Dr. Polk regards as most likely to suffer are the vessels going to the uterus through the broad ligaments. These, by being stretched and dragged upon in extraction, might be torn if the sides of the incision were not carefully supported in cases requiring powerful traction.

Unsuccessful Porro Operation.

Dr. GERICHARD publishes an account of an unsuccessful Porro operation on a woman, aged 25 years, with dorsal cyphosis of the eighth vertebra, of inflammatory origin, dating from the age of six. The inferior strait of the pelvis was reduced in diameter to 4 centimetres. The uterus at term caused the abdominal walls to hang down like a wallet five fingers' breadth below the knees. Porro's operation was performed, and a healthy male child was extracted. The mother died on the third day without any peritoneal complication, but accompanied by meteorism, dyspnœa, and heart failure.—*Ann. de Gynecol.*, May, 1882.

Extra-Uterine Fœtation treated by Antiseptic Abdominal Section; Recovery.

A paper on this subject was read by Mr. KNOWSLEY THORNTON, at the meeting of the Obstetrical Society of London, held April 5th.

The early history of the case was narrated at the March meeting of the Society. The author would divide cases of extra-uterine fœtation into three classes: 1. Those in which accurate diagnosis is possible. 2. Those in which probability, but not certainty, in diagnosis can be reached. 3. Those in which the nature of the case is not suspected until internal hemorrhage or other untoward accident takes place. In Cases 1 and 3 he thought it bad practice not to operate; in Case 2 an exploratory operation should be performed if the symptoms were urgent. But such operation should only be performed (1) under strict Listerian precautions, and (2) by a surgeon of special experience in abdominal section, for they were extremely difficult.

Dr. ROUTH said that wherever there was a growing abdominal tumour, and a complete decidua was voided per vaginam, the diagnosis of extra-uterine fœtation might be made. The successful removal of the placenta in this case was due to its hypertrophied condition. Possibly the placental souffle might have been heard.

Dr. ROGERS said that the souffle heard over fibroids was not so marked as that of the placenta. He thought the presence of milk in the breasts would aid diagnosis.

The PRESIDENT drew attention to the persistent life of the placenta after fœtal death, and its great hypertrophy. He did not believe the souffle was placental; he called it uterine. The discharge of an entire decidua was a valuable diagnostic aid. He remembered a case in which such a decidua was passed; rupture of the sac and internal hemorrhage took place. After a few days he evacuated the hæmatocele per vaginam and found chorionic villi in the fluid. The patient did well. Nowadays he would have had laparotomy done to get the bleeding stopped.

Mr. THORNTON said the souffle was not heard; had it been it would have to him strengthened the diagnosis of fibroid. The case narrated by the President was a very rare one. He thought that now abdominal section would be attended with less risk than the course followed.—*Lancet*, April 22, 1882.

Storage and the Utilization of the Phosphates in Pregnancy.

In a recent number of the *Union Médicale*, Dr. DELATTRE discusses a phenomenon of early pregnancy which he considers has not hitherto received the attention which, both on physiological and therapeutical grounds, it deserves. He refers to the almost complete disappearance of the phosphates from the urine. These salts, he says, are, except the small proportion as yet required by the development of the fœtus, either stored up in the maternal bones, which increase in weight and density, or, occasionally, deposited on their surface in the form of osteophytes, which have long been looked on as errors of nutrition. In the later months, when the fœtal bones are growing and ossifying rapidly, these reserves are drawn on, and the osteophytes, if present, disappear. The absorption is not complete at the time when the child is born, but goes on during the normal duration of lactation supplying phosphates to the milk. Such is the course of events in the case of a healthy and well-nourished woman: if, on the other hand, she be weakly and ill-fed, she is compelled, instead of laying up and subsequently employing a reserve of phosphates, to draw on her own tissues for the supply, which, after all, is insufficient for the wants of her child, who is consequently puny, rickety, and late in dentition. These considerations suggested to him the administration of phosphates in the most easily assimilated form to the mother during the whole period of pregnancy; and this treatment was in nine cases out of ten followed by the best results. In one instance, out of four children, the first two were feeble in mind and body, with enlarged glands, soft bones, pale complexion, etc.; but the last two, though born after the mother had been further reduced by anxiety and a nervous malady, were robust, rosy, and boisterous. This he attributes solely to the employment during the last two pregnancies of the treatment mentioned. Again, the first two children of one of his colleagues did not cut their first teeth until more than eleven months of age, but the third, after the mother had been taking phosphate of lime, cut them without any disturbance of health at a few days over four months, and was in every respect stronger and healthier than the older ones. He also believes that he has seen a marked amelioration in the vomiting and other nervous derangements accompanying pregnancy in the cases in which he has adopted this mode of treatment.—*Med. Times and Gaz.*, April 15, 1882.

Hydrorrhœa during Pregnancy.

M. QUEIREL has published in the *Marseille Méd.* an interesting memoir, in which he studies the various elements of the still debated question of the nature of the watery discharges frequently occurring during pregnancy, and spoken of under the generic name of hydrorrhœa. He relates first two cases. In one, a multipara, six months advanced in pregnancy, there had been two effusions of colourless fluid. He was called after the third, which occurred during the night without conscious pain. From the odour, the marks on the linen, and the abundance of the loss, he had no doubt that this was a flow of amniotic fluid, although there was no commencing miscarriage. With prolonged repose and laudanum injections, the patient went on satisfactorily to full time, and was delivered of a healthy child. In the second case, a similar loss occurred at the fourth month, accompanied by abdominal pain and uterine colic. Rest and laudanum injections relieved the pain and arrested the loss. Similar phenomena reappeared and disappeared at the end of five weeks, but fifteen days afterwards the discharge recurred and was followed by abortion. The fœtus was six months old and well developed. M. Queirel points out that cases are reported under the

name of hydrorrhœa which are of certainly different natures, and include the flow of fluids of a very different aspect, nature, and origin from amniotic fluid. In some cases, there is a rupture of the membranes from injury or severe contraction, chiefly occurring during the night. This form of rupture is usually followed by labour from six to nine weeks afterwards. The discharge in these cases should be called hydramniorrhœa. When the liquid which escapes presents somewhat of the character of the amniotic fluid and the flow is reproduced at regular intervals, and the pregnancy continues its regular course, the case is probably one of true hydrorrhœa; that is to say, a flow of serous fluid secreted by the maternal vessels and the external surface of the ovum. This is the theory of Nægelé. Exceptionally, the possibility may be admitted of a fluid furnished by an accidental cyst, by a twin ovum of which the product has been dissolved, or by the uterine glands of the cervix, true catarrh of the cervix. Finally, cases may be diagnosed which may be confounded with these, and are not the least important; that is to say, cases of incontinence of urine, or of vesico-vaginal fistula, and cases in which the fluid may come from the vulvar glands. The mistake of confounding the flow with escape of urine has, especially, often been committed. The following case observed by Magail deserves to be related as an example. A woman, in her first pregnancy, several times had watery discharges; she was, however, delivered at full term of a living child, and the hydrorrhœa continued after pregnancy. In the second pregnancy the flow did not cease, and it was verified by several physicians whom she consulted. M. Depaul himself treated her for chronic affection of the uterus, and discovered only after several weeks of treatment that the fluid was furnished by the bladder. There was not, however, any vesico-vaginal fistula, but the anterior wall of the vagina was relaxed and ruptured on the middle of the vulva. There was a vaginal cystocele, with depression of the uterus. M. Magail relieved the infirmity by raising the uterus with the aid of tampons immersed in astringent fluid.—*London Medical Record*, March 15, 1882.

Syphilis in Pregnancy and its Effects on the Offspring.

In this paper, Prof. VON HECKER, of Munich, gives an account of 173 cases of childbirth in connection with syphilis (*Wiener Medizin. Blätter*, 1881, No. 37). The cases are divided into four groups. The first includes cases, 81 in number, in which the mother at the time of her confinement was suffering from active syphilis which had not been treated. Broad condylomata about the anus and on the labia, or ulcers of the fossa navicularis, were usually present, but general signs of syphilis were very rarely found. Of these children, 46 were born at term; 35 were premature or stillborn; 46 children were free from signs of syphilis at birth, and remained so during their stay in the lying-in hospital. On the other hand, 25 children were born in a macerated condition, without any syphilitic lesions of the internal organs. The placenta, however, was frequently increased in weight. In seven cases the children showed specific lesions, such as pemphigus, or syphiloma of the internal organs; while in three, death was ascribed to non-syphilitic causes.—Group 2 comprises cases in which the mother's syphilis had been treated, usually in hospital, for a shorter or longer period. In the 32 cases of this kind, a similar effect was produced on the offspring as in group 1; 14 children were born at term, and 18 prematurely; 11 were quite healthy; 9 dead and rotten; 4 bore signs of syphilis; and 8 were weakly, but not specially diseased.—Group 3 contains 7 cases of old syphilis; 2 of the children were born healthy; 4 with signs of syphilis; and 1 was in a weakly condition.—Group 4 consists of 53 cases in which, in spite of the most careful examination, no trace of syphilis was discovered in the mother. Consequently, in the opinion of the author, the children derived

syphilis from the fathers. The 53 births produced 55 children (two being cases of twins). The fœtuses only reached maturity in very rare instances, and the majority were much below the normal weight. Thus, 23 weighed between 4 and 5 pounds, and 48 between 3 and 6 pounds. Only 2 were born in a state of maceration. But 18 were born dead; 12 died within twelve hours after birth; and 16 during the eleven following days, leaving only 9 who survived. Pemphigus was noticed 41 times, and in most cases was present at birth. Affections of the lungs were observed in 31 cases, under the form of white lobular pneumonia in 18, and of syphiloma in 14. Abscess of the thymus was noted 16 times; and syphilitic disease of the liver 14 times, always in the form described by von Barenprung. In 12 cases there was induration of the pancreas, which was considerably enlarged, and of cartilaginous hardness. Section of the organ was difficult, and was attended by a grating sound, similar to that produced in cutting through scirrhus. The spleen was enlarged in 10 cases; the suprarenal bodies were indurated in 8; the brain was affected in 3; and peritonitis was found in 3 cases. These facts support the author's opinion that, in most cases of inherited syphilis of the internal organs, the father is the source of the disease.—*Lond. Med. Record*, Jan. 15, 1882.

On the Menstrual Wave.

From an interesting paper on this point, Dr. WM. STEPHENSON concludes:—

1. That the menstrual life is associated with a well-marked wave of vital energy which manifests itself in the temperature of the body, in the daily amount of excretion of urea, and to a slighter extent in the pulse rate.

2. That the cycle of changes takes a true wave form, divisible as to time into two nearly equal parts, the one below, the other above, the average for the whole period.

3. That the length of this wave varies in different individuals, and may vary also in the same person. The urea wave and the temperature wave are equal in length in the same case.

4. That menstruation does not correspond with the apex (or "climax") of the waves, but occurs five or six days after the decline has begun. It is probable that normally it occurs when the temperature curve reaches the mean; this was the case in nine out of ten menstruations. The flow or evacuation cannot be regarded as the cause of the decline.

5. That the temperature wave is the most uniform and gradual in its rise and fall. In the urea curve, the transition to elevation takes place more quickly, even suddenly; in one case it rose in twenty-four hours from -15 to $+15$ per cent.

6. That the temperature wave and urea wave are independent of each other; for whilst in one case they are exactly synchronous, in the other, the urea wave is four days in advance of the temperature wave.

7. That whilst the pulse wave is not so marked in character, it also shows a decided influence; it is depressed after menstruation, and manifests a distinct rise some days before the next period.

8. In all the waves there are evidences of secondary waves. This is seen in the temperature just after the rise above the mean, and the explanation of the irregularity in certain cases may be that this secondary wave is separated from the primary, and stands out more distinctly. The sudden elevation which characterizes the urea wave may be due to the influence of two waves. From a different analysis of the pulse curve, he is inclined to believe that it has an independent wave of from five to six days' duration, and on this wave is superimposed the menstrual wave which causes the depression and elevation already noticed.—*Amer. Journ. of Obstet.*, April, 1882.

Retention of Menstrual Fluid in One-half of a Double Uterus.

At the meeting of the Obstetrical Society, held February 1, Dr. GALABIN related the case of a patient, aged fifteen, who was brought by her mother for consultation for symptoms exactly resembling those of ordinary severe spasmodic dysmenorrhœa. No swelling or tumour had been noticed. Menstruation was fairly regular, and rather profuse. The pain was felt chiefly during the flow, was intermittent, agonizing in severity, and led to retching and hysterical manifestations. On examination, a firm globular swelling, without any fluctuation or elasticity, about as large as the uterus at three months and a half pregnancy, was felt through the anterior vaginal wall. The os was difficult to discover, and was displaced backwards and flattened antero-posteriorly. The patient was so hyperæsthetic that it was impossible to attempt to use the sound. The author rejected the hypothesis of fibroid tumour on account of the patient's youth, and the commencement of the symptoms with puberty, and felt sure that menstrual fluid would not accumulate to any amount in the uterus if there were any exit whatever through the cervix. He therefore diagnosed retention in one-half of a double uterus. It was agreed with Dr. Stirling, of Grangeroad, under whose care the patient had been, that an anæsthetic should be given, and the swelling evacuated if the diagnosis appeared to be confirmed on use of the sound. Under anæsthetics it was found that the sound passed easily to the normal length, going rather towards the right side, and the os appeared to be displaced a little to the right. The swelling was then punctured, and the usual treacly fluid, seen in cases of retained menses, began to escape. The opening was enlarged with scalpel and director, till it easily admitted the finger, and about ten ounces of fluid escaped. No injection was used on the spot, but it was intended to commence antiseptic injections, after allowing a few hours for complete escape of the fluid. The extreme hyperæsthesia and hysterical resistance of the patient, however, made it impossible to do more than syringe the vagina. Discharge of sanguineous fluid was free up to the third day, but it then almost stopped, and what there was became offensive. Next day febrile symptoms set in, the temperature rising to 104.6°, pulse to 140. The patient's friends refused to allow an anæsthetic to be given to wash out the uterus until the seventh day, when the author saw her again. There was then still high fever, but no sign of peritonitis. An anæsthetic having been given, the opening into the left half of the uterus was again enlarged, and the cavity washed out with solution of absolute phenol, 1 in 40. Considerable improvement followed up to the twelfth day, although it still proved to be impossible to do more than syringe the vagina, and little doubt was felt about the patient's recovery. On the twelfth day she was suddenly attacked with violent pain in the abdomen and collapse, and died in about twelve hours. The author thought that the symptoms pointed to rupture either of the Fallopian tube or of some abscess in the neighbourhood.

Dr. GRAILY HEWITT's experience had led him to the conclusion that it was safer, in performing the operation for retained menses, to make a small opening and allow gradual escape of fluid, and gradual contraction of the walls of the cavity, which were often weak and thin. If allowed to discharge itself too quickly a suction might afterwards be exercised, and septic material drawn in.

Dr. GERVIS thought that Dr. Galabin had himself pointed out what would have been the most useful addition to the conduct of the case, the washing out with antiseptic fluid the uterine cavity. He agreed with Dr. Hewitt as to the importance of moderately slow evacuation, but with antiseptic precautions, thinking that the danger was less through any uterine suction than through decomposition of unremoved fluid.

Dr. WYNN WILLIAMS differed from Dr. Graily Hewitt in that he had made a very free opening, to get rid of all the menstrual fluid at once. He would have syringed out the uterus with a solution of iodine, which he believed the safest and best antiseptic. He would also have avoided making a second incision, any septic condition being present.

Dr. CHAMPNEYS had seen a case of retained menses in one-half of a double uterus, under Dr. Winekel, of Dresden. In this slow evacuation did not prevent a fatal result, which was caused by the retraction of the uterus from an adhesion, which tore a hole in the thin uterine wall. Death resulted from septic peritonitis.

Dr. CLEVELAND was surprised at the fear expressed as to the use of carbolic acid injections. In chronic inflammation of the bladder he had used injections of absolute phenol, 1 in 50 or 60 of water, with excellent results.

Dr. CARTER agreed with what had been said as to the dangerous results which had at times followed the injection of a solution of carbolic acid into the uterus. He related the case of a patient who was for some time in a very critical state after washing out the uterus the third day after a miscarriage with a solution of the strength of 1 in 80.

Dr. MALINS thought there was some doubt about Dr. Galabin's diagnosis in the absence of an autopsy. The symptoms and physical state did not seem inconsistent either with an anterior hæmatocele or thrombus in the cellular tissue. He had met with similar cases in which the difficulty in insuring drainage and disinfection had been overcome by using a winged catheter with the end cut off. He thought nothing better than tincture of iodine for disinfection.

Dr. ROUTH could not agree with Dr. Hewitt in his advice to make a small opening. Experience proved that it often closed, and occasionally was followed by fatal symptoms. His own plan was to draw off by a large aspirator, and to inject iodine solution, doing this morning and evening, and keeping in a drainage-tube.

Dr. MATTHEWS DUNCAN remarked that he, in cases of retained menses, made a free opening and allowed the fluid to drain away, using no injection of any kind. He had in a considerable experience had no fatal case or evil result, and he believed he had observed injurious consequences of the injection of plain warm water in cases which he had witnessed.

Dr. GALABIN thought that the plan of gradual evacuation was desirable when the quantity of retained fluid was large, but not when it was small or moderate. He did not think the fatal result in his case could be attributed to the injection of carbolic acid, or even to the second incision; for a marked improvement had followed that proceeding, and continued for at least four days. He did not believe the case could have been one of hæmatocele, for the swelling had been perfectly movable, and he did not think that the contents of a hæmatocele ever so perfectly resembled the uniform treacly fluid seen in cases of retained menses. —*Lancet*, March 11, 1882.

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Unilateral Vaginal Oöphorectomy.

Dr. BRAITHWAITE, of Leeds, read a paper on the above subject at the meeting of the Obstetrical Society of London, on April 5th.

Case 1. The patient, aged 30, was the wife of a workman. She suffered from attacks of dyspnoea, which were brought on by exertion, and which could only be relieved by certain very peculiar positions of the body. There was a mitral murmur: the patient was pale, and in wretched general health, and the muscle of the heart probably extremely feeble. Menstruation was normal. There was a prolapsed ovary, pressure on which did not bring on the dyspnoea, but caused much

pain. The diagnosis was that the dyspnœa was cardiac, but in some way excited by a prolapsed and very tender ovary. In no other way could the relief by posture be explained. The prolapsed ovary was removed, with the result that the dyspnœa was nearly but not completely cured.

Case 2. The wife of a miner, aged twenty-two, a healthy-looking woman. She had always been very hysterical. She suffered from constant pain in the left ovarian region, dating from the birth of her first child three years and a half previously, since which time she had never been free from it, except during the last three months of her succeeding pregnancies, three in number. The left ovary was prolapsed behind the uterus, and exquisitely tender. It was removed, with the result of complete cure. The author believed that the vaginal method of oöphorectomy was the best and simplest for ovaries which were prolapsed or non-adherent.

Dr. ROBERT BARNES regretted that the attitude assumed by London surgeons towards those who practised obstetrics seriously obstructed the progress of this branch of surgery. All great improvements in surgery were largely due to a spirit of enterprise, it might be said of experimental research. He thought that Battey's operation had now emerged from the doubtful domain of experimental surgery, and that we should soon arrive at definite conclusions as to the scope of its application. In a case in which, six months ago, he had removed the ovaries, the fibroid which formed the immediate cause of suffering had almost shrunk away. There was a proclivity, from anatomical reasons, to prolapsus and disease of the left ovary rather than the right. He inquired if the Fallopian tube had been removed. This question was of physiological as well as surgical interest.

Dr. HICKINBOTHAM thought that in Dr. Braithwaite's first case there was a large amount of hysteria. He attributed some of the relief obtained to the rest and other therapeutic means incident to hospital treatment. He asked what amount of small cysts indicated disease, and what symptoms did they produce? They were seen in ovaries removed for widely different conditions.

Dr. HEYWOOD SMITH said that the interest of the cases would be enhanced if the condition of the patients was reported in six or twelve months; for Battey found that when one ovary only was removed the pain was apt to recur. He thought the abdominal operation preferable in single women; but the incision should be three or four inches in length. The ovaries he had removed he had found diseased. He had no doubt that the operation in proper cases was destined to be of the greatest service.

Mr. KNOWSLEY THORNTON thought it still an open question whether oöphorectomy was justifiable for ovarian pain; but there was a great field for it for hemorrhage from fibroids. Accumulated statistics showed that abdominal oöphorectomy was a very safe operation, but that vaginal oöphorectomy was not. He did not think London was behindhand in abdominal surgery.

Dr. GERVIS did not think that the decision as to the advisability of this operation should be influenced by the possibility of a subsequent recurrence of hysteria. In the cases in which he had performed it for local suffering the result had proved its utility.

Dr. MATTHEWS DUNCAN was not opposed to oöphorectomy; but he could not adopt the theory implied in the first case read. To remove one ovary as a treatment of cardiac dyspnœa he regarded as a wild proceeding; nor could he imagine that it would ever come within the range of rational medicine.

Dr. BRAITHWAITE had removed part of the Fallopian tube in the second case, not in the first. He had secured the pedicles with strong catgut, and united the vaginal wound with one suture only at its lower third. He did not think there

was any element of hysteria in these cases. The relief to the dyspnœa in Case 1 by the peculiar positions described showed that it was not altogether cardiac. Since the paper had been sent in he had heard that the patient was now suffering from cardiac dropsy. Had the operation been done earlier the result might have been better.—*Lancet*, April 22, 1882.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

The Mechanism of Death from Chloroform.

A discussion is now proceeding at the Paris Académie de Médecine on the dangers of chloroform, and the most noteworthy contribution which it has elicited is a statement by M. VULPIAN of certain teachings of experiment on the subject. The lessons are by no means reassuring to those who look on chloroform with grave suspicion. The danger of death is shown by experiment to be present at the commencement, during the course, or at the end of the chloroformization, and even sometimes for some hours or days subsequently. The occasional cases of death immediately after the commencement of inhalation receive their explanation from experiment. In healthy animals respiration may be at once arrested by pinching the superior laryngeal nerves, and even by a strong sensory impression. Thus, if chloroform is merely applied to the nostrils of an animal, respiration is sometimes arrested. The medulla oblongata has been thought unaffected by the inhalation of chloroform; but, although resisting the influence of chloroform longer than other parts of the nervous system, it is unquestionably affected, in some degree, even in moderate anæsthesia. If the pneumogastric nerves are divided in a healthy animal, it continues to breathe. Stimulation of the central ends then arrests respiration, which recommences, even though the peripheral extremities are faradized. But if the same experiment is performed on an animal under the influence of chloral or of chloroform, the breathing does not recommence after it has been arrested by stimulation of the divided pneumogastries. This shows that in the anæsthetic state the medulla oblongata is in a functional condition different from its normal state. Again, in an animal under normal conditions, faradization of the peripheral ends of the divided pneumogastries arrests the heart in diastole; but if the stimulation is continued, the contractions recommence. If the same experiment is performed on an animal under the influence of chloroform, the arrest of the heart is more readily produced, and is final. Hence chloroform acts on the respiratory centres; but it acts also upon the motor ganglia of the heart. In animals the cardiac failure is much more grave than the respiratory failure; life cannot be saved in more than one in forty of the former, although in the more frequent cases of respiratory failure life can often be preserved by artificial respiration. M. Vulpian fully confirms the slighter degree of danger involved in the use of ether, in consequence of which he invariably prefers it as a means of obtaining anæsthesia in experiments on animals.—*Lancet*, April 8, 1882.

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On account of the great advances which have been made of late years in otology, and of the increased interest manifested in it, the medical profession will welcome this new work, which presents clearly and concisely its present aspect, while clearly indicating the direction in which further researches can be most profitably carried on. Dr. Burnett has produced a work which as a text-book

stands *facile princeps* in our language. To the specialist the work is of the highest value, and his sense of gratitude to Dr. Burnett will, we hope, be proportionate to the amount of benefit he can obtain from the careful study of the book, and a constant reference to its trustworthy pages.—*Edinburgh Medical Journal*, August, 1878.

THE NATIONAL DISPENSATORY—Second Edition—Now Ready.

THE NATIONAL DISPENSATORY; CONTAINING THE NATURAL HISTORY, CHEMISTRY, PHARMACY, ACTIONS AND USES OF MEDICINES, including those recognized in the Pharmacopœias of the United States, Great Britain and Germany, with numerous references to the French Codex. By ALFRED STILLÉ, M.D., LL.D., Professor of the Theory and Practice of Medicine and of Clinical Medicine in the University of Pennsylvania, and JOHN M. MAISCH, Phar.D., Professor of Materia Medica and Botany in the Philadelphia College of Pharmacy, Secretary to the American Pharmaceutical Association. Second edition, thoroughly revised, with numerous additions. In one very handsome volume of 1692 pages, with 239 illustrations. Extra cloth, \$6.75; leather, raised bands, \$7.50; half Russia, raised bands and open back, \$8 25.

The National Dispensatory is beyond dispute the very best authority. It is throughout complete in all the necessary details, clear and lucid in its explanations, and replete with references to the most recent writings, whose further particulars can be obtained, if desired. Its value is greatly enhanced by the extensive indexes—a general index of Materia

Medica, etc., and also an index of Therapeutics. It would be a work of supererogation to say more about this well known work. No practicing physician can afford to be without the National Dispensatory.—*Canada Medical and Surgical Journal*, February, 1880.

THE
JEFFERSON MEDICAL COLLEGE
OF PHILADELPHIA.

THE Fifty-eighth Session of the Jefferson Medical College will begin on Monday, October 2d, 1882, and will continue until the end of March, 1883. Preliminary Lectures will be held from Monday, 11th of September.

PROFESSORS.

S. D. GROSS, M.D., LL.D., D.C.L. Oxon., LL.D. Cantab. (Emeritus). Institutes and Practice of Surgery.	ROBERTS BARTHOLOW, M.D., LL.D., Materia Medica and General Therapeutics.
ELLERSLIE WALLACE, M.D., Obstetrics and Diseases of Women and Children.	HENRY C. CHAPMAN, M.D., Institutes of Medicine and Medical Jurisprudence.
J. M. DA COSTA, M.D., Practice of Medicine.	SAMUEL W. GROSS, M.D., Principles of Surgery and Clinical Surgery.
WM. H. PANCOAST, M.D., General, Descriptive, and Surgical Anatomy.	JOHN H. BRINTON, M.D., Practice of Surgery and Clinical Surgery.
ROBERT E. ROGERS, M.D., Medical Chemistry and Toxicology.	WILLIAM THOMSON, M.D., Professor of Ophthalmology.

The recent enlargement of the College has enabled the Faculty to perfect the system of *Practical Laboratory Instruction*, in all the Departments. Rooms are assigned in which each Professor, with his Demonstrators, instructs the Class, in Sections, in direct observation and hand-work in the Chemical, Pharmaceutical, Physiological, and Pathological Laboratories. Operative and Minor Surgery, and investigation of Gynecological and Obstetric conditions on the *Cadaver*, are taught, as also Diagnosis of Disease on the living subject. The experience of the past Session has abundantly proven the great value of this Practical Teaching.

This course of Instruction is *free of charge*, but *obligatory upon* candidates for the Degree, except those who are Graduates of other Colleges of ten years' standing.

A *SPRING COURSE* of Lectures is given, beginning early in April, and ending early in June. There is no additional charge for this Course to matriculates of the College, except a registration fee of five dollars; non-matriculates pay forty dollars, *thirty-five of which, however, are credited on the amount of fees paid for the ensuing Winter Course.*

CLINICAL INSTRUCTION is given *daily* at the HOSPITAL OF THE JEFFERSON MEDICAL COLLEGE throughout the year by Members of the Faculty, and by the Hospital Staff.

F E E S.

Matriculation Fee (paid once).....\$5 00	Practical Anatomy.....\$10 00
Ticket for each Branch (7) \$20.....140 00	Graduation Fee.....30 00

Fees for a full course of Lectures to those who have attended two full courses at other (recognized) Colleges—the matriculation fee, and\$70 00
To Graduates of less than ten years of such Colleges—the matriculation fee, and \$50 00
To Graduates of ten years, and upwards, of such Colleges—the matriculation fee only.

The Annual Announcement, giving full particulars, will be sent on application to

ELLERSLIE WALLACE, *Dean.*

BELLEVUE HOSPITAL MEDICAL COLLEGE, CITY OF NEW YORK.

SESSIONS OF 1882-83.

The COLLEGIATE YEAR in this Institution embraces the Regular Winter Session and a Spring Session. The REGULAR SESSION will begin on Wednesday, September 20, 1882, and end about the middle of March, 1883. During this Session, in addition to four didactic lectures on every week-day except Saturday, two or three hours are daily allotted to clinical instruction. Attendance upon two regular courses of lectures is required for graduation. The SPRING SESSION consists chiefly of recitations from Text-Books. This Session begins about the middle of March, and continues until the middle of June. During this Session, daily recitations in all the departments are held by a corps of Examiners appointed by the Faculty. Short courses of lectures are given on special subjects, and regular clinics are held in the Hospital and in the College building.

FACULTY.

- ISAAC E. TAYLOR, M.D.,
Emeritus Prof. of Obstetrics and Diseases of Women and Children, and President of the Faculty.
- FORDYCE BARKER, M.D., LL.D.,
Prof. of Clinical Midwifery and Diseases of Women.
- BENJAMIN W. MCCREADY, M.D.,
Emeritus Professor of Materia Medica and Therapeutics, and Professor of Clinical Medicine.
- AUSTIN FLINT, M.D., LL.D.,
Prof. of the Principles and Practice of Medicine, and Clinical Medicine.
- W. H. VAN BUREN, M.D., LL.D.,
Prof. of Principles and Practice of Surgery, and Clinical Surgery.
- LEWIS A. SAYRE, M.D.,
Professor of Orthopedic Surgery and Clinical Surgery.
- ALEXANDER B. MOTT, M.D.,
Professor of Clinical and Operative Surgery.
- WILLIAM T. Lusk, M.D.,
Professor of Obstetric and Diseases of Women and Children, and Clinical Midwifery.
- A. A. SMITH, M.D.,
Professor of Materia Medica and Therapeutics, and Clinical Medicine.
- AUSTIN FLINT, Jr., M.D.,
Professor of Physiology and Physiological Anatomy, and Secretary of the Faculty.
- JOSEPH D. BRYANT, M.D.,
Professor of General, Descriptive, and Surgical Anatomy.
- R. OGDEN DOREMUS, M.D., LL.D.,
Professor of Chemistry and Toxicology.
- EDWARD G. JANEWAY, M.D.,
Prof. of Diseases of the Nervous System, and Clinical Medicine, and Associate Professor of Principles and Practice of Medicine.

PROFESSORS OF SPECIAL DEPARTMENTS, Etc.

- HENRY D. NOYES, M.D.,
Professor of Ophthalmology and Otology.
- EDWARD L. KEYES, M.D.,
Prof. of Cutaneous and Genito-Urinary Diseases.
- JOHN P. GRAY, M.D., LL.D.,
Professor of Psychological Medicine and Medical Jurisprudence.
- FREDERICK S. DENNIS, M.D., M.R.C.S.,
Professor Adjunct to the Chair of Principles and Practice of Surgery.
- WILLIAM H. WELCH, M.D.,
Professor of Pathological Anatomy and General Pathology.
- J. LEWIS SMITH, M.D.,
Clinical Professor of Diseases of Children.
- JOSEPH W. HOWE, M.D.,
Clinical Professor of Surgery.
- LEROY MILTON YALE, M.D.,
Lecturer Adjunct on Orthopedic Surgery.
- BEVERLY ROBINSON, M.D.,
Professor of Clinical Medicine.
- FRANCIS H. BOSWORTH, M.D.,
Professor of Diseases of the Throat.
- CHARLES A. DOREMUS, M.D., Ph.D.,
Professor Adjunct to the Chair of Chemistry and Toxicology.
- FREDERIC S. DENNIS, M.D., M.R.C.S.,
WILLIAM H. WELCH, M.D.,
Demonstrators of Anatomy.

FACULTY FOR THE SPRING SESSION.

- FREDERICK A. CASTLE, M.D.,
Lecturer on Pharmacology.
- WILLIAM H. WELCH, M.D.,
Lecturer on Pathological Histology.
- T. HERRING BURCHARD, M.D.,
Lecturer on Surgical Emergencies.
- CHARLES S. BULL, M.D.,
Lecturer on Ophthalmology and Otology.
- CHARLES A. DOREMUS, M.D., Ph.D.,
Lecturer on Animal Chemistry.

FEES FOR THE REGULAR SESSION.

Fees for Tickets to all the Lectures, Clinical and Didactic	\$140 00
Fees for Students who have attended two full courses at other Medical Colleges, and for Graduates of less than three years' standing of other Medical Colleges	70 00
Matriculation Fee	5 00
Dissection Fee (including material for dissection)	10 00
Graduation Fee	30 00
No Fees for Lectures are required of Graduates of three years' standing, or of third-course Students who have attended their second course at the Bellevue Hospital Medical College.	

FEES FOR THE SPRING SESSION.

Matriculation (Ticket valid for the following Winter)	\$5 00
Recitations, Clinics and Lectures	40 00
Dissection (Ticket valid for the following Winter)	10 00

For the Annual Circular and Catalogue, giving regulations for graduation and other information, address Prof. AUSTIN FLINT, Jr., Secretary, Bellevue Hospital Medical College.

UNIVERSITY OF THE CITY OF NEW YORK, MEDICAL DEPARTMENT.

410 East Twenty-sixth St., opp. Bellevue Hospital, New York City.

FORTY-SECOND SESSION, 1882-83.

FACULTY OF MEDICINE.

REV. JOHN HALL, D.D., LL.D., *Chancellor of the University, pro tem.*

ALFRED C. POST, M.D., LL.D., Professor Emeritus of Clinical Surgery; President of the Faculty.

CHARLES INSLEE PARDEE, M.D., Dean of the Faculty; Professor of Otology; Surgeon to the Manhattan Eye and Ear Hospital.

JOHN C. DRAPER, M.D., LL.D., Professor of Chemistry.

ALFRED L. LOOMIS, M.D., Professor of Pathology and Practice of Medicine; Visiting Physician to Bellevue Hospital.

WM. DARLING, M.D., LL.D., F.R.C.S., Professor of General and Descriptive Anatomy.

WILLIAM H. THOMSON, M.D., Professor of Materia Medica, Therapeutics and Diseases of the Nervous System; Visiting Physician to Bellevue Hospital.

J. W. S. ARNOLD, M.D., Professor of Physiology and Histology.

J. WILLISTON WRIGHT, M.D., Professor of Surgery; Visiting Surgeon to Bellevue Hospital.

WM. M. POLK, M.D., Professor of Obstetrics and the Diseases of Women and Children; Gynecologist to Bellevue Hospital.

LEWIS A. STIMSON, M.D., Professor of Surgical Pathology; Surgeon to Bellevue Hospital; Curator to Bellevue Hospital.

FANEUIL D. WEISSE, M.D., Professor of Practical and Surgical Anatomy; Surgeon to Workhouse Hospital, B. I.

STEPHEN SMITH, M.D., Professor of Clinical Surgery; Surgeon to Bellevue Hospital.

A. E. MACDONALD, LL.B., M.D., Professor of Medical Jurisprudence and Diseases of the Mind; Medical Superintendent of the New York City Asylum for the Insane.

R. A. WITTHAUS, M.D., Professor of Physiological Chemistry.

HERMAN KNAPP, M.D., Professor of Ophthalmology; Surgeon to the Ophthalmic Institute.

AMBROSE L. RANNEY, M.D., Adjunct Professor of Anatomy.

JOSEPH E. WINTERS, M.D., Demonstrator of Anatomy.

THE PRELIMINARY SESSION will begin on Wednesday, September 20, 1882, and end October 4, 1882. It will be conducted on the same plan as the Regular Winter Session.

THE REGULAR WINTER SESSION will begin October 4, 1882, and end about the middle of March, 1883. The Plan of instruction consists of Didactic and Clinical Lectures, recitations and laboratory work in all subjects in which it is practicable. To put the laboratories on a proper footing a new building has been erected at an expense of thirty thousand dollars. It will contain laboratories fitted for instruction in Chemistry, Histology, Pathology, Materia Medica, Operative Surgery and Gynecology.

Two to five Didactic lectures and two or more Clinical lectures will be given each day by members of the Faculty. In addition to the ordinary clinics, *special clinical instruction*, WITHOUT ADDITIONAL EXPENSE will be given to the candidates for graduation during the latter part of the Regular Session. For this purpose the candidates will be divided into sections of twenty-five members each. All who desire to avail themselves of this valuable privilege must give in their names and pay their examination fee of \$30 to the Dean during the first week in November. At these special clinics students will have excellent opportunity to make and verify diagnoses, and watch the effects of treatment. They will be held in the Wards of the Hospitals and at the Public and College Dispensaries.

Each of the seven professors of the Regular Faculty will conduct a recitation on his subject one evening each week. Students are thus enabled to make up for lost lectures, and prepare themselves properly for their final examinations without additional expense.

THE SPRING SESSION will begin about the middle of March and end the last week in May. The daily Clinics and Special Practical Courses will be the same as in the Winter Session, and there will be Lectures on Special Subjects by the Members of the Faculty.

It is supplementary to the Regular Winter Session. Nine months of continued instruction are thus secured to all students of the University who desire a thorough course.

FEEs.

For course of Lectures.....	\$140 00
Matriculation	5 00
Demonstrator's Fee, including material for dissection.....	10 00
Final Examination Fee.....	30 00

For further particulars and circulars address the Dean,

PROF. CHAS. INSLEE PARDEE, M.D.,
University Medical College, 410 East 26th St., New York City.

CHICAGO MEDICAL COLLEGE.

MEDICAL DEPARTMENT OF THE NORTHWESTERN UNIVERSITY.

SESSIONS OF 1882-3.

H. A. JOHNSON, A.M., M.D.,
Emeritus Professor of the Principles and
Practice of Medicine.

N. S. DAVIS, M.D., LL.D., DEAN,
Professor of Principles and Practice of
Medicine and of Clinical Medicine.

EDMUND ANDREWS, A.M., M.D.,
Professor of Clinical Surgery.

RALPH N. ISHAM, M.D.,
Professor of Principles and Practice of
Surgery.

E. C. DUDLEY, M.D.,
Professor of Gynecology.

E. O. F. ROLER, A.M., M.D.,
Professor of Obstetrics and Diseases of
Children.

SAMUEL J. JONES, A.M., M.D.,
Professor of Ophthalmology and Otology.

J. H. HOLLISTER, M.D.,
Professor of Clinical Medicine.

J. S. JEWELL, A.M., M.D.,
Professor of Nervous and Mental Diseases.

WM. E. QUINE, M.D.,
Professor of General Therapeutics.

MARCUS P. HATFIELD, A.M., M.D.,
Professor of Medical Chemistry and
Jurisprudence

JOHN E. OWENS, M.D.,
Professor of Surgical Anatomy and
Operations of Surgery.

LESTER CURTIS, A.M., M.D.,
Professor of Histology.

F. C. SCHAEFER, M.D.,
Professor of Anatomy.

HENRY GRADLE, M.D.,
Professor of Physiology.

J. H. LONG, PH.D.,
Professor of General Chemistry.

O. C. DEWOLF, M.D.,
Professor of State Medicine and Hygiene.

WALTER HAY, M.D., LL.D.,
Professor of Materia Medica.

C. FENGER, M.D.,
Prof. of Pathology and Surgical Diseases
of Genito-Urinary Organs.

I. N. DANFORTH, M.D.,
Professor of Clinical Medicine.

FRANK BILLINGS, M.D.,
Demonstrator of Anatomy.

The Collegiate Year in this Institution consists of a REGULAR AUTUMN AND WINTER SESSION, a special SESSION FOR PRACTITIONERS, and a SPRING SESSION. THE REGULAR SESSION begins September 26, 1882, and closes March 27, 1883.

This College was the first in the United States to adopt a graded system of instruction. All applicants for admission must possess at least a good English education, and present full evidence of the same. If an applicant has received the degree of A. B., or presents a certificate from some reputable Scientific School, High School, or Academy, no matriculation examination will be required; otherwise he must sustain a satisfactory examination before a committee of the Faculty. The students are divided into 1st YEAR, 2d YEAR, and 3d YEAR CLASSES, instructions being given simultaneously in different lecture rooms. If students so elect, they can enter the 2d Year's Course if they have studied medicine for one year previously, and can sustain a satisfactory examination upon the studies embraced in the 1st Year's Course.

The Clinical advantages of this College, with the great number of Dispensary, College Clinic and Hospital patients, cannot be surpassed. All professors of practical branches are members of the staff of Mercy or Cook County Hospital, or other charities. For several sessions each senior student has had the privilege of attending upon one or more obstetrical cases, and of witnessing important obstetrical operations.

It is the aim of the Faculty to make all instruction in the College scientific and pre-eminently practical.

THE PRACTITIONERS' COURSE, designed for Practising Physicians only, was inaugurated in 1879. It has proven so satisfactory to all concerned that it will be continued and constitute a portion of each Collegiate year. This course will begin the day following the public Commencement exercises, and continue for four weeks, affording, by means of didactic and daily clinical instruction, special advantages to physicians for a rapid, yet thorough, practical review of the most important subjects in Medicine and Surgery. The SPRING SESSION consists of Recitations, Laboratory and Dispensary work, and Clinical and Didactic Lectures, beginning April 1, 1883, and closing June 1, 1883.

FEES FOR COLLEGIATE YEAR (except Practitioners' Course), \$75. Registration Fee, \$5. Demonstrator's Ticket, \$5. Laboratory Ticket, \$5. Mercy Hospital Ticket, \$6. Final Examination Fee, \$30. For Practitioners' Course, including Laboratory, Anatomical, and Hospital Tickets, \$30.

For the Annual Announcement and Catalogue, or for any information relating to the College, address

N. S. DAVIS, M.D., LL.D., DEAN,
65 Randolph St., Chicago.

MIAMI MEDICAL COLLEGE OF CINCINNATI.

Session 1882-83.

The next term will commence September 30, 1882, preceded by a Preliminary Course from September 7th.

THE COLLEGE BUILDING

Has recently been much enlarged and remodelled, and is now well adapted in all respects for Medical Teaching.

PRACTICAL INSTRUCTION.

A large Chemical Laboratory, extensive Dissecting Room, and well-equipped Histological and Physiological Laboratory, furnish excellent facilities for practical study in these important branches.

CLINICAL STUDY.

Daily Clinics are held in the College Building, at which patients in all departments of Medicine and Surgery are treated, and students have opportunity to practise the various methods of examination and manipulation required by Modern Medicine.

Clinical Lectures are delivered daily at Cincinnati Hospital in close proximity to the College.

DIDACTIC LECTURES

Are delivered by a complete Corps of Professors who have ample resources in Specimens, Models, Drawings, etc., for illustration of their Lectures.

F E E S :

Professors' tickets	.	.	.	.	.	.	\$75 00
Matriculation ticket	.	.	.	.	.	.	5 00
Hospital ticket	.	.	.	.	.	.	5 00
Dissection ticket	.	.	.	.	.	.	5 00
Graduation	.	.	.	.	.	.	25 00

For particulars address

WM. H. TAYLOR, M.D., *Secretary*,
No. 329 W. 7th Street.

JOHN A. MURPHY, M.D., *Dean*,
No. 163 W. 7th Street.

SAINT LOUIS MEDICAL COLLEGE,

ST. LOUIS, MO.

FACULTY.

A. LITTON, M.D., Professor of Chemistry and Pharmacy.	JOHN GREEN, M.D., Lecturer on Ophthalmology.
J. B. JOHNSON, M.D., Professor of the Principles and Practice of Medicine.	W. L. BARRET, M.D., Lecturer on Diseases of Women.
E. H. GREGORY, M.D., Professor of the Principles and Practice of Surgery and Clinical Surgery.	J. M. SCOTT, M.D., Lecturer on Clinical Medicine.
J. T. HODGEN,* M.D., Professor of Surgical Anatomy, Special Fractures and Dislocations, and Clinical Surgery at the City Hospital.	G. A. MOSES, M.D., Lecturer on Clinical Gynecology.
J. S. B. ALLEYNE, M.D., DEAN, Professor of Therapeutics, Materia Medica, and Diseases of Children.	N. B. CARSON, M.D., Assistant to the Chair of Surgery.
E. F. SMITH, M.D., Professor of Clinical Medicine and Pathological Anatomy.	W. C. GLASGOW, M.D., Clinical Lecturer on Physical Diagnosis.
L. CH. BOISLINIERE, M.D., Professor of Obstetrics.	W. E. FISCHER, M.D., Lecturer on Therapeutics.
G. BAUMGARTEN, M.D., Professor of Physiology.	J. FRIEDMAN, M.D., Demonstrator of Chemistry.
H. H. NUDD, M.D., Professor of Anatomy, and Clinical Surgery at the City Hospital, and Demonstrator of Anatomy.	EDWARD EVERS, M.D., Lecturer on Histology.
	R. LUEDEKING, M.D., Lecturer on Pathological Anatomy.
	JOHN P. BRYSON, M.D., Lecturer on Diseases of the Genito-Urinary Organs.
	W. A. MCCANDLESS, M.D., } Ass't Demonstrator of Anatomy.
	FRANK R. FRY, M.D., }

The Forty-first regular Session will begin on September 25th, 1882, and continue until March 1st, 1883.

The Spring Session of each year begins about the middle of March, and continues eleven weeks.

A Post-Graduate Course is held during the month of April.

EXAMINATION FOR ADMISSION.—Henceforth all students entering the College will be required to pass a satisfactory examination in the branches of a good English education, including English grammar, orthography and composition, mathematics and elementary physics. Students who present a diploma or certificate of graduation from a literary or scientific college, or a high school, shall be exempt from this preliminary examination.

The Course of Studies in this School extends over a period of three years, and is a graded one. This plan has been pursued with complete success for the past two years. The Curriculum is arranged as follows:—

FIRST YEAR (JUNIOR CLASS).—Chemistry—Chemical Laboratory Practice—Anatomy—Dissections—Histology—Physiology—Materia Medica.

SECOND YEAR (MIDDLE CLASS).—Chemistry—Anatomy—Dissections—Physiology—Materia Medica and Therapeutics—Pathological Anatomy—Surgical Anatomy—Fractures and Dislocations—Medical and Surgical Clinics—Principles and Practice of Medicine.

THIRD YEAR (SENIOR CLASS).—Dissections—Medicine—Surgery—Surgical Anatomy—Fractures and Dislocations—Ophthalmology—Obstetrics—Diseases of Women—Diseases of Children—Diseases of Genito-Urinary Organs—Medical, Surgical, Ophthalmic and Gynecological Clinics.

The Spring Session (optional) embraces the usual Clinics, an Obstetric Out-Clinic, and Lectures on a number of special subjects.

Attendance on the three Courses of Lectures is one of the requirements of Graduation.

FEES.

Matriculation Fee.....	\$5 00
Fee for each Regular Term.....	30 00
No extra charge is made for Demonstrator's, Laboratory or Hospital Tickets. The Fee for the Third Term includes the Graduation Fee.	
Fee for the Spring Session.....	25 00
For Students who remain through the ensuing Winter Session this sum will be deducted from the fee for the regular term.	
Laboratory Fee for Students who work during the Spring Session..	10 00
Fee for the Post-Graduate Course.....	30 00

The Annual Announcement, and all further information, may be obtained from

J. S. B. ALLEYNE, M.D., *Dean*,
3132 Washington Avenue.

* Deceased.

ATLANTA MEDICAL COLLEGE.

ATLANTA, GEORGIA.

The Twenty-fifth Annual Course of Lectures in this Institution will commence on Thursday, the 12th of October, 1882, and close on the 1st of March, 1883.

FACULTY.

- A. W. GRIGGS, M.D., Emeritus Professor of Practice.
 J. G. WESTMORELAND, M.D., Emeritus Professor of Materia Medica and Therapeutics.
 W. F. WESTMORELAND, M.D., Professor of Principles and Practice of Surgery.
 WM. ABRAM LOVE, M.D., Professor of Physiology.
 V. H. TALIAFERRO, M.D., Professor of Obstetrics and Diseases of Women and Children.
 W. S. ARMSTRONG, M.D., Professor of General and Descriptive Anatomy, Lecturer on Clinical Medicine.
 A. W. CALHOUN, M.D., Professor of Diseases of the Eye, Ear, and Throat.
 J. H. LOGAN, A.M., M.D., Professor of General and Medical Chemistry.
 H. V. M. MILLER, M.D., LL.D., Professor of Principles and Practice of Medicine, Lecturer on Clinical Medicine, and Dean of the Faculty.
 J. S. TODD, M.D., Professor of Materia Medica and Therapeutics, Lecturer on Clinical Medicine.
 JAMES A. GRAY, M.D., Lecturer on Venereal Diseases, and Proctor.
 D. H. HOWELL, M.D., Lecturer on Minor Surgery.
 C. A. WHITE, M.D., Demonstrator of Anatomy.

The Trustees and Faculty feel secure in presenting the claims of the Atlanta Medical College to those desiring a medical education. They are assured that many causes combine to render this city, of 50,000 people, the great medical centre of the South.

Her extensive railroad connections make it easily accessible from all points.

The energy of her people in every avocation has conferred a prosperity that is proverbial.


The expenses of living, in whatever style, are cheaper, we believe, than in any city of like size in the United States.

Epidemics are unknown in this city. There is no malaria with us. Those who have been affected by this poison in other localities, find here a retreat in which they may recover their health. Students from the North or West may find here, while acquiring their education, protection from the dangers of a more rigorous climate without subjecting themselves to the risk of other diseases.

The climate is healthy and bracing, and well adapted for sustaining a student through the physical and mental strain of a course of medical lectures.

The Faculty avail themselves of every facility of clinical and didactic teaching. Not only does Atlanta, with a large proportion of inhabitants dependent on charity for medical attention, afford a vast amount of clinical material, but her central position and railroad facilities draw from a distance a great number of interesting cases that may be presented before the class.

The Faculty constantly and zealously labor to utilize all these advantages in placing the Atlanta Medical College among the foremost in imparting a THOROUGH AND PRACTICAL KNOWLEDGE of medical science in all its principles and details. They claim that its prosperous condition and constantly increasing classes for years past are the highest evidence of the achievement of this object.

 All business communications should be addressed to

Dr. JAMES A. GRAY,
 Proctor, Atlanta Medical College.

MEDICAL DEPARTMENT OF THE UNIVERSITY OF LOUISIANA—NEW ORLEANS.

FACULTY.

T. G. RICHARDSON, M.D., Professor of General and Clinical Surgery.

SAMUEL M. BEMISS, M.D., Professor of the Theory and Practice of Medicine and Clinical Medicine.

STANFORD E. CHAILLÉ, M.D., Professor of Physiology and Pathological Anatomy.

JOSEPH JONES, M.D., Professor of Chemistry and Clinical Medicine.

SAMUEL LOGAN, M.D., Professor of Anatomy and Clinical Surgery.

ERNEST S. LEWIS, M.D., Professor of General and Clinical Obstetrics and Diseases of Women and Children.

JOHN B. ELLIOTT, M.D., Professor of Materia Medica and Therapeutics, and Hygiene.

ALBERT B. MILES, Demonstrator of Anatomy.

The next annual course of instruction in this Department (now in the forty-ninth year of its existence) will commence on Monday, the 16th day of October, 1882, and terminate on Saturday, the 24th day of March, 1883. The first three weeks of the term will be devoted exclusively to Clinical Medicine and Surgery at the Charity Hospital; Practical Chemistry in the Laboratory; and dissections in the spacious and airy Anatomical Rooms of the University.

The means of teaching now at the command of the Faculty are unsurpassed in the United States. Special attention is called to the opportunities presented for

CLINICAL INSTRUCTION.

The Act establishing the University of Louisiana gives the Professors of the Medical Department the use of the great Charity Hospital as a school of practical instruction.

The Charity Hospital contains nearly 700 beds, and received, during the last year, *more than six thousand* patients. Its advantages for professional study are unsurpassed by any similar institution in this country. The Medical, Surgical, and Obstetrical Wards are visited by the respective professors in charge daily, from eight to ten o'clock A. M., at which time all the students are expected to attend and familiarize themselves, *at the bedside of the patients*, with the diagnosis and treatment of all forms of injury and disease.

The regular lectures at the hospital, on Clinical Medicine by Professors Bemiss and Joseph Jones, Surgery by Professors Richardson and Logan, Diseases of Women and Children by Professor Lewis, and Special Pathological Anatomy by Professor Chaillé, will be delivered in the amphitheatre on Monday, Wednesday, Thursday, and Saturday, from 10 to 12 o'clock A. M.

The administrators of the hospital elect annually, by competitive examinations, *fourteen resident students*, who are maintained by the institution.

TERMS.

For the Tickets of all the Professors	\$140 00
For the Ticket of Practical Anatomy	10 00
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ARTICLE I.

ON FRACTURES OF THE SKULL, RESTRICTED TO THE INNER TABLE. By JOHN A. LIDELL, A.M., M.D., of New York, late Surgeon to Bellevue Hospital, Surgeon U. S. Vols., in charge of Stanton Military General Hospital.

THE extreme dangerousness of this lesion is so obvious as to be past all controversy or denial. In the Americanized edition of *Holmes's Surgery*, the writer recently had occasion to show that cranial fractures are restricted to the inner table much oftener than has generally been supposed, and that this form of cranial injury occurs with so much frequency as to make a special description of it necessary in every large work on surgery. Researches made for other purposes since that was written have brought to my notice fresh evidence not only that my views were correct, but also that this lesion occurs with even a greater frequency than I had believed, and that it unquestionably should be assigned a prominent place among the traumatic lesions of the skull, which, although not very infrequent, are very obscure or little understood, and nearly always fatal, unless promptly treated when symptoms appear. Still, to the surgeon who is himself familiar with this lesion, and who will not overlook the phenomena which it produces, the diagnosis of it may not in all cases be impracticable, nor even very difficult; and thus it may be quite possible to save some patients whose sole injury consists of a comparatively small fracture with slight depression of the inner table of the skull, whose ill effects, if their cause be recognized in time, can readily be obviated by a surgical operation, when otherwise death is nearly certain.

I therefore propose in this article to present some additional cases, which have never appeared in a medical journal, together with a somewhat more full or thorough exposition of the subject, than treatises on

surgery ordinarily will admit; and especially of the symptoms, diagnosis, and treatment.

CASE I. *Inner Table of Occipital Bone Fractured; Superior Longitudinal Sinus Punctured; Inter-meningeal Hemorrhage; Cerebral Compression; Death therefrom in thirty hours; Autopsy.*—Private A. G., Co. C, 39th Infantry, was beaten on the head with a club, in an affray at Fort Pike, La., in April, 1868. He was stunned, but soon recovered his senses, and remained conscious about an hour. After that he began to wander, and gradually became violently delirious. He had antiphlogistic treatment. Coma with muttering delirium ensued, and he died on the next day, thirty hours after injury.

Autopsy twelve hours after death. There was a large extravasation of blood between the scalp and cranium. The internal lamina of the occipital bone was splintered at its junction with the parietal bones, but the external lamina was intact. One splinter, sharp as a needle, protruded into the torcular Herophili. There was a large extravasation of blood between the hemispheres, especially on right side; in middle fossa, a clot the size of a pigeon's egg. Lateral ventricles filled with bloody serum; subarachnoid interstices contained much serum. Heart filled with dark clots; right ventricle flabby; other organs sound. (*Circular No. 3, War Department, S. G. O., August 17, 1871, being "A Report of Surgical Cases treated in the Army of the United States, from 1865 to 1871," p. 120.*)

Reports of such cases as the above are very useful, and deserve a wide publicity. In it the *proximate* cause of death was compression of the brain from extravasated blood. The *efficient* cause, however, was the laceration of a great venous sinus of the dura mater by a fragment of the inner table of the skull, which gave rise to the hemorrhage.

The interpretation of the symptoms is not difficult. The blow was not heavy enough to fracture both tables, but only the inner one. The concussion of the brain attending it was not severe, and the "stunning" soon passed away. An hour later the symptoms of cerebral irritation and of cerebral compression appeared, in consequence of the puncture of a large venous sinus by a sharp splinter of bone, with extravasation of blood upon the membranes of the brain, increased by the pulsatory movements of the brain and its membranes against the sharp splinter. Here we observe the interval of restored consciousness between the insensibility of concussion and that of compression of the brain, which was pointed out and justly dwelt upon by J. L. Petit, was distinctly marked; and had the therapeutical indication which it denoted been fulfilled by trephining the skull, extracting the splinters of the inner table, and removing the coagulated blood, the patient would, most probably, have been saved. The blow was so slight that the original injury was confined to the scalp, the inner table of the skull, and the adjacent sinus of the dura mater. On exposing the splinter of bone by an operation, and extracting it, the hemorrhage from the wounded sinus could easily have been stopped by applying a dossil of lint with light pressure, as Pott pointed out and successfully practised more than one hundred years ago.

But why was trephining not resorted to in this case? Possibly the occurrence of hemiplegia was waited for to indicate the spot where the instrument should be applied; and so the man died, when a timely per-

formance of the operation would have afforded a good prospect of recovery. The conclusion is irresistible that in cases such as the above the coma should be combated, even when there is no hemiplegia to indicate with certainty where the extravasation lies, by incising the contused scalp where it is most prominent down to the bone, and, in the event of finding no lesion of the outer table, applying, nevertheless, the large crown of a trephine, and reapplying it, if necessary, to remove the mechanical cause of a constantly increasing coma, which otherwise must soon end in death. Even if the risks attending the operation of trephining with antiseptic precautions and after-treatment were much greater, it would still be the surgeon's duty to give his patient the benefit of this sole chance for recovery.

CASE II. Fracture of Skull confined to Inner Table; Traumatic Epilepsy; Death three years after Injury; Autopsy.—Private James H. B., Co. G, 20th Infantry, robust, but an inebriate, was admitted to hospital at New Orleans, La., September 12, 1868, in an epileptic fit, which occurred on the 22d. Symptoms of severe meningitis and cerebritis supervened. Notwithstanding quite active treatment he gradually sank into profound coma, and died on the 27th. It was ascertained that the patient had received a blow on the head three years previously, and ever since had been subject to epilepsy. The hospital register of the post showed that he had, at various times, been under treatment.

Autopsy fourteen hours after death. Two old cicatrices were found on the scalp; one over the posterior part of the parietal suture, about half an inch from its occipital termination, and about one inch and a half in length; the other was over the left parietal eminence, and about one inch in length; otherwise the scalp seemed whole and perfect. Under the first-mentioned cicatrix the cerebrum was found closely adherent to the dura mater, and the dura mater itself at this point, although loosely connected with the skull, was with difficulty removed; in fact, the knife had to be used to detach it for about one square inch from the surface of the hemispheres, indicating previous inflammation and adhesion; the Pacchionian bodies here were more numerous, larger, and standing prominently out from the surface; immediately below this point, and between the hemispheres, a splinter of bone was found imbedded in the falx cerebri. The cerebral substance generally, as well as the meninges, was actively congested, altered in colour, and in consistence. A preparation of the bone from this case is preserved in the Army Medical Museum (*Spec.* 5517, Sec. I.), and a wood-cut of it is presented in Circular No. 3. (*Ibid.*, p. 115.)

Was there any fracture in this case? The reporter and editor thereof both appear to have been impressed with an affirmative belief. Indeed, the old lesions of the dura mater and arachnoid, occupying a space one inch square, that were found underneath the principal cicatrix in the scalp, pretty clearly show that there was a reunited cranial fracture of limited extent, and the absence of adhesions externally indicates that this fracture was confined to the inner table.

The splinter of bone found in the falx cerebri was an osteophyte, the product of an excessive activity among the histological elements, or morphological constituents of the falx; but its formation denotes that there was an osteal lesion also present, and thus it strengthens the opinion that there was a reunited cranial fracture. The formation of this osteophyte in the fibrous tissue of the falx cerebri no doubt was strictly analogous

to the formation of detached osteophytes in the connective tissue of the extremities, in proximity to fractures of the long bones.

The operation of trephining antiseptically performed and antiseptically cared for, appears just as likely to permanently relieve such cases as the above, as trephining the long bones does to remedy an analogous state of the medullary canal, wherein the operation usually proves successful.

A considerable number of cases, in which this lesion occurred, were likewise reported by our military surgeons during the late civil war. Dr. Otis, the distinguished historiographer, presents copious abstracts, admirably illustrated by four lithographic figures and fifteen wood-cuts, of twenty instances in which there was gunshot contusion of the cranium with fracture of the inner table, and very usefully devotes eighteen large quarto pages to that purpose. (*First Surgical Vol.*, pp. 141-159.) In ten of these cases the osteological specimens were sent to the Army Medical Museum, where they are now preserved, forming no doubt by far the best series of preparations to illustrate the subject that has ever been collected.

Recovery took place in but one of these twenty examples. Of it I shall make a very brief mention, for it affords some very important instruction:—

CASE III. *Gunshot Wound of Scalp, followed by Necrosis and Exfoliation of a large piece of the Right Parietal Bone; Inner Table of this fragment at one point broken and Displaced; five years afterwards Patient still living.*—A soldier, aged 18, was wounded July 14, 1864, by a conoidal musket-ball, which tore up his scalp over the occiput. On the 16th he was sent to general hospital at Fortress Monroe. On the 25th he was transferred to New York; and, on the 27th, he was admitted to the McDougall Hospital at Fort Schuyler, where he remained until August 31st. At these three hospitals his case appears not to have attracted particular attention, for the records merely announce the date of his admission and transfer with "gunshot wound of the head." On August 31st, however, he was removed to the Broad and Cherry Streets Hospital at Philadelphia, and came under the charge of Dr. H. M. Bellows, who has reported what is known of this interesting case. He stated that he had suffered from fever at Fort Schuyler, and was now supposed to be convalescing. He was feeble, anemic, and very much emaciated. He complained of headache and of constant chilliness. Over the right branch of the lambdoidal suture there was a sore, presenting healthy granulations at the edges, with denuded bone at the bottom. A tonic regimen was prescribed, and emollient dressings were applied to the wound. For the next two months the patient steadily improved under this treatment. The wound gave little trouble, but it was obvious that the dead bone must come away before it would heal. On November 3d he was granted a fortnight's furlough. On his return, the dead bone was found to be movable; and, on the 23d, it was extracted. This fragment of necrosed bone was one inch and a half in length, and embraced the entire thickness of the skull. The dura mater beneath was normal, and through it the pulsations of the brain were distinctly perceived. The wound cicatrized without further trouble. Ultimately, the patient was discharged from the service and pensioned. On March 9, 1870, the pension-examiner reported him as totally disabled from attacks of vertigo, incapacitating him from any physical exertion. The aperture in the skull had been filled, partly by bone, partly by fibrous tissue.

The fragment of necrosed bone that was extracted is preserved in our Army Medical Museum (*Spec.* 4194, *Sec. I.*). It came from the posterior part of the right parietal, near the occipito-parietal suture. It measures an inch and a half in length, by a little less than an inch in breadth. The outer table is unbroken. The inner table is fractured, and the splinter is depressed about one line. A

wood-cut, showing the appearance of each table, together with an official account of the case, is presented in the first surgical volume of the history of the war (pp. 149, 150).

Thus, by necrosis and exfoliation an aperture in the skull was made in the foregoing case, and the depressed piece of the inner table was successfully removed. This circumstance is, to surgeons, a most instructive feature of the case; for it directly suggests the idea that, by making an aperture in the skull with a trephine so as to remove the depressed splinter of bone in similar cases, the surgeon merely assists nature in executing her own plan of cure.

Another circumstance, of like import, which should be mentioned here, is, that in many, perhaps in all of the nineteen fatal cases reported during the civil war, the external table was found to be necrosed over the seat of fracture in the inner table, provided the patient survived the accident long enough for the evidences of necrosis to appear, as if, in these cases also, Dame Nature had commenced the same procedure for removing the depressed fragment of the inner table.

These twenty gunshot fractures of the inner table with contusions of the outer, were caused in fifteen instances by the oblique impact of musket-balls, in four instances by shell-fragments, and in one instance by a buck-shot. The blow was struck upon the parietal region in fourteen cases, upon the frontal region in four cases, and upon the occipital region in two cases.

The lesions of the inner table consisted, in a very large proportion (nearly one-half) of these twenty cases, of irregular fissures with sharp and jagged edges that were slightly depressed. In one of these instances a sliver of bone penetrated the dura mater. In another, the vitreous plate of both parietals was fractured and depressed, inasmuch as the fissure extended across the sagittal suture. In several, the vitreous or inner table was broken, and splintered, and depressed, to a considerable extent; in one it was found broken into three triangular pieces, measuring altogether one inch and a quarter in length by three-fourths of an inch in breadth, which were depressed two lines at the apex. But in several cases the fracture consisted of only one piece of the inner table, irregular in shape, measuring from one inch to one inch and a half in length, and from three-fourths of an inch to a whole inch in breadth, and depressed from one line to one-fourth of an inch or more.

The duration of life in these nineteen fatal cases of fracture of the inner table from gunshot, varied from ten to sixty-one days, the average being twenty-two days. In thirteen, the splintering of the inner table was attended with suppurative inflammation beneath the dura mater; in two, pyæmia and metastatic foci supervened; and, in four, there was encephalitis and softening of the cerebral substance. Thus, it appears that in cases where the inner table alone is fractured by gunshot the sources of danger are just the same as in cases where the external table is fissured,

while the inner table is comminuted, and the sharp splinters are depressed upon or driven into the dura mater; and as they also are in cases where both tables sustain punctured fractures. In all such cases fatal inflammation of the membranes or substance of the brain will ensue, unless the offending fragments of the inner table are removed by a timely operation performed by nature herself, as happened in the case related above, or by the surgeon in imitation of nature.

But, the operation of trephining to be successful in such cases must, as a rule, be performed early. This operation was unavailingly performed in four of these nineteen fatal cases, having been undertaken at a late period, or as a remedial measure of last resort in every instance.

To the foregoing summary of the twenty gunshot cases that are reported in the *Surgical History of the War*, must be added another case which I find reported in the same work, under "Gunshot Contusions of the Cranium;" but in which, however, the inner table also was fractured and depressed. This case belongs to a class that is probably numerous, of which, unfortunately, but few examples have been recorded, and is, therefore, of special importance. The following are its salient points:—

CASE IV. Gunshot Contusion of Left Parietal Bone with Fracture of Inner Table; Acute Meningitis on Right Side supervened and caused Death; Autopsy; a large piece of Inner Table was found adhering to Dura Mater.—A soldier, aged 18, was wounded at Hatcher's Run, Va., March 31, 1865, by a conoidal musket-ball, which cut the scalp and contused the left parietal bone. No osseous lesion could be detected, and the case progressed without remark until April 16th, when two or three slight convulsive paroxysms, with sopor in the intervals, occurred. Delirium, ending in coma, ensued. Spasmodic contraction of the muscles on left side of body was observed. An abscess beneath the injured scalp was opened. Notwithstanding a very active medico-surgical treatment, the patient died on the 30th, one month after the casualty occurred, and fourteen days after the convulsions appeared.

Autopsy about fourteen hours after death. External table of skull at wound of scalp manifestly necrosed. Inner table at same point fractured; a plate of bone about one inch in length by three-fourths of an inch in breadth was separated from the inner table and adhered to the dura mater. Underneath, the cerebral substance was softened; and, at the depth of about three-quarters of an inch, a small cerebral abscess, not larger than a small hickory-nut was found. Above, the meninges presented merely a slight pearliness. But on reflecting the dura mater from the *right*, i. e., the opposite cerebral hemisphere, the arachnoid over the middle lobe was found to be acutely inflamed, presenting an abundant deposit of soft coagulable lymph. (*First Surgical Vol.*, p. 112.)

The contractions of the muscles on the left or wounded side of the body, in this case, were produced by the acute meningitis of the right side, which itself had supervened without apparent cause.

The small abscess found in the left cerebral hemisphere was due to a commotion which was imparted to the soft parenchyma of the brain by the sudden blow or impact of the missile on the skull.

In this case, as in many of the cases already mentioned, there was necrosis of the outer table at the place where it was struck by the missile; and nature apparently had likewise begun to perforate the cranium in her own way.

The fragment of the inner table, however, was not necrosed, for it adhered to the dura mater, and thus was abundantly supplied with nutrient blood. In this respect the case differed widely from all the gunshot examples of this lesion that I have yet adduced. The fragment of the inner table did not become a foreign body, and did not, by its presence, excite traumatic meningitis. Had the man survived the other lesions, this fragment could have reunited. That which might have happened in this case, and probably did occur in Case II., I suspect does happen very much oftener than surgeons generally suppose. I shall hereafter present one or, perhaps, two additional examples.

No cases of fracture of the inner table of the cranium without external fracture have been noticed in the reports of the Confederate Army Medical Department now filed in the Surgeon-General's Office; two cases, however, occurred in Confederate prisoners who died in our hospitals (*Ibid.*, p. 147).

Thus, I have adduced from the *Surgical History of the War*, twenty-one instances of this lesion that were caused by the impact of gunshot missiles. In how many other cases that were reported as gunshot "Contusions of the Skull," but wherein nominal recovery occurred, or no autopsy was held, must ever remain a matter of conjecture; nevertheless, it is quite probable that there were several cases of this sort.

The following example occurred a few years ago, in private practice. It was reported by Dr. W. H. Triplett, of Woodstock, Vt. The lesion was diagnosed during life. The account of it is interesting in other respects, as well as very instructive. Although much shorter than the original, it retains, I believe, every essential particular:—

CASE V. Inner Table of Os Frontis Fractured, the External Table remaining unbroken; Meningo-Cerebritis; Death; Autopsy.—On the night of Oct. 24, 1872, a blacksmith, aged 45, spare built, but very athletic, was struck with a stone upon the right frontal eminence, making a clean cut through the scalp, shaped something like the letter V, down to, and exposing the bone. A piece of the pericranium, half an inch in diameter, was removed, and the surface of the bone roughened, but not fractured. He was not stunned, and went home without any inconvenience. He also went to the doctor's office to get his wound dressed. He was advised to remain quietly at home, and to live sparsely for some days.

On Oct. 28 he had his wound dressed again at the doctor's office. It appeared healthy, and he made no complaint.

Oct. 29. The doctor was sent for in the evening, and found his patient in bed, exhibiting considerable constitutional disturbance; pulse 90; skin hot and dry; severe cephalalgia; and he had had several chills during the day. The wound looked healthy. An active purgative, with ipecacuanha, was given, which operated freely.

30th. His skin was moist and pulse normal; no cephalalgia.

31st. He claimed to feel comfortable, except an occasional sharp pain in the wound.

On Nov. 1 he came to the doctor's office, and entered it laughing. His face was slightly flushed, however, and he had some cephalalgia.

Nov. 2. At 5 P. M. the doctor was again sent for. He found his man sitting up near the stove with severe cerebral symptoms. His head was hot, but still he kept it near the stove as he found some ease in that position. There was severe cephalalgia, with a feeling of fulness or tension through the temples; face

flushed, with profuse lachrymation; pulse 90, regular, and not very strong, but the carotids were throbbing somewhat violently. He was perfectly rational, but exceedingly desirous of sleep; said "if he did not get something to put him to sleep he should go crazy." An active cathartic was administered, and a blister applied behind the ear. A Dover's powder was also given.

3d. There was intolerance of light; pupils dilated, the right more than the left; face flushed; right eyelids red and swollen; tongue dry; pulse same as yesterday; he was very talkative, but had slept some over night; he said he was chilly, and felt best near the stove.

4th. The symptoms were worse; pulse frequent and irregular; pupils contracted; reddening and swelling of right eyelids increased; some tendency to stupor; he has cephalalgia and intolerance of light, but is quite rational and talkative, keeping his eyes shut. Wet cups were put on his temples, and a brisk cathartic was administered. An hour later he was taken with a severe rigor; fifteen grains of chloral hydrate promptly arrested it. Two hours later still he had premonitions of another rigor, but a smaller dose of chloral hydrate aborted it. After this he rapidly sank into stupor.

5th. He was aroused with difficulty, and answered questions hurriedly but intelligently; pulse intermittent, frequent, and small; mouth parched.

6th. There was decided coma; pupils insensible to light; in the evening hemiplegia of the left side appeared; during the night universal paralysis of motion and sensation occurred, the only signs of life remaining being the respiratory movements, about forty per minute, and the pulse rapid, intermittent, irregular, and difficult to count.

7th. At 6 o'clock A. M. he died, fifteen days after the injury.

Autopsy nine hours after death. On reflecting the scalp, the bruised part of the frontal bone was found to be white, as though dead, denuded of pericranium to the extent of nearly an inch, and without fracture. In removing the skull-cap several ounces of very offensive straw-coloured liquid escaped, mixed with pus and flakes of lymph. The inner table was fractured underneath the external wound, and a splinter of bone two-thirds of an inch long by one-third of an inch broad, was found depressed upon the dura mater, which had been detached over a space an inch or more in diameter. The splinter was depressed about two lines, and was covered with pus, as was the dura mater also. This membrane was discoloured and softened. There was a shallow cup-shaped depression on the surface of the anterior lobe of the right cerebral hemisphere beneath the fracture, several inches in extent, and partially filled with pus. The visceral arachnoid and the pia mater were destroyed over the surface. The whole of the right cerebral hemisphere was covered over with pus and lymph. The substance of this hemisphere was softened throughout, and the anterior lobe was pulpy. The consistence of the left hemisphere was normal.

"In view of the circumstance that the man had received little or no concussion of the brain, and, *a fortiori*, no contusion or laceration of its substance, the opinion was formed that the trouble grew out of fracture of the internal table, a prediction that the post-mortem fully verified." (*Boston Medical and Surgical Journal*, vol. 88, pp. 385-388. 1873.)

The symptoms in this case appear to have been carefully, and sometimes graphically recorded, and I have thus presented them with a view to illustrate the semeiology of this important lesion. The symptoms, too, were clearly those of traumatic inflammation of the membranes and substance of the brain, of a suppurative character, obviously caused by the sharp splinter of bone from the inner table, which pricked and scratched the dura mater as that membrane moved with each pulsation of the brain. The hemiplegia of the left side, the coma, and the general paralysis, which quickly followed one another, as the case drew to a close, were all due to a compression of the right cerebral hemisphere, that was caused by the

products of this inflammation of the membranes and substance of the brain, *i. e.*, by pus, and lymph, and serum.

The portion of skull that was struck by the stone was found white, as though dead, and denuded, *i. e.*, it was necrosed. In this case, then, we again find nature endeavouring to liberate the imprisoned fragment of the inner table, as we have already seen in many other cases, thereby suggesting anew to the surgeon the propriety of trephining in similar cases.

Moreover, the diagnosis appears to have been correctly surmised during life, a circumstance which strongly testifies to the knowledge and sagacity of the medical gentlemen who were in attendance. Why, then, was no effort made to save this patient by the operation of trephining, as was done with success in the following case, and in several other instances which I shall mention in the sequel?

CASE VI. *Trephining Successfully Employed for Fracture of the Tabula Vitrea and Sub-dural Abscess.*—A man, aged 37 (*Iowa Med. Journal*, 1867, p. 34), was struck over the supra-orbital ridge, and marked symptoms of compression set in at the end of three weeks. Professor Hughes applied the trephine at the injured spot, and found fragments of the inner table of the frontal bone depressed on the dura mater, without involvement of the outer table. Upon incising the dura mater and evacuating a quantity of pus, there was an immediate return to consciousness. (*Am. Journal Med. Sciences*, July, 1873, p. 63.)

Thus, I have brought to notice twenty-five instances of this lesion, which were reported in America alone, since 1861; two cases from Circular No. 3, twenty-one cases from the *Surgical History of the War*, and two cases from private practice.

One proceeding that is often used at autopsies strongly tends to prevent the recognition of this lesion when actually present, namely, the employment of hammers and chisels in opening skulls. I have good grounds to believe that, in such cases, on finding a fracture limited to the inner table, its occurrence may be attributed to violence used in opening the cranium *post mortem*, when, in reality, due to *ante-mortem* violence; for I distinctly remember one case in which the inner table of the skull was found broken at the autopsy of a man who had a gunshot wound of the scalp with unconsciousness, and an unknown history, but, inasmuch as the sawing of the skull had been supplemented by the use of a hammer and a chisel, I could not with certainty decide that the lesion was of *ante-mortem* date. In such cases, too, small fissures of the inner table would almost certainly pass unnoticed.

This remarkable form of cranial injury was well known to our predecessors. Quesnay mentions an example which occurred in the practice of M. Soulier, of Montpellier. He also states that the writings of Valeriola and Aræus already contain "sufficient proofs" of "the reality of this kind of fracture." He likewise refers to a case reported by Tulpius, and to another case mentioned by Borelli. (*Memoirs Roy. Acad. Surg. of France*, Syd. Soc. Trans., Obs. 19, p. 20. London, 1848.)

Paré, however, relates the first undoubted instance of this lesion which we find on record:—A cavalier of M. d'Estampe's company received, at the breach of the chateau of Hedin, a ball from an arquebuse, which struck upon his helmet over the parietal bone. The scalp was not wounded, and the helmet but slightly indented. Nevertheless, on the sixth day he died comatose; and, Paré, wishing to know the cause of death, opened his skull. The external table was found entire, but the inner table was broken into several fragments, which penetrated the membranes of the brain. (*Œuvres*, etc., t. ii. p. 22. Paris, 1840, ed. par J. F. Maligne.)

Garengeot next reports the following case:—M. Mery dressed a scalp wound on the middle part of the left parietal, which did not appear at first to extend down to the bone. The patient had hemorrhage from the nose, his eyes seemed bruised and much inflamed, and he also had considerable fever, accompanied by convulsive movements. All these symptoms taken together gave rise to a suspicion that the skull was fractured, and that in consequence there was an effusion upon the brain.

M. Mery made a crucial incision, and found that the perieranium was not adherent to the skull, and that the latter was of a fine vermilion-red, without any fracture. Inasmuch as the symptoms continued unchanged in spite of repeated venesections, M. Mery declared that since the perieranium was not adherent to the skull, it might have happened that the force of the blow, which had not sufficed to break the outer table, had really broken the inner table; whereupon he applied the trephine, although there was no external appearance of fracture. As soon as the disk of bone was taken out, the inner table thereof was seen to be split through its whole diameter, and consequently it was known that the fissure extended beyond the trephine hole. He removed a quantity of clotted blood effused upon the dura mater, which was almost gangrenous; and supported by the spirit of wine, and the excellent care of this great surgeon, the patient made a good recovery. (*Traité des Operations de Chirurgie* 2me. ed., t. iii., pp. 122, 123, obs. xii. Paris, 1731.)

This appears to be the first instance on record wherein the existence of this lesion was surmised during life, and, at the same time, the diagnosis was verified by an operation. There are, however, at least four additional cases on record in which the operation of trephining was performed by our predecessors with complete success. Brief abstracts of each should be presented.

La Motte relates the case of a man who was struck on the head by a stone thrown at him. He dropped senseless. After some time (*long-temps*) he recovered, but remained vertiginous, so that he could neither stand nor sit, but was obliged to lie down. The wound of the scalp was in size less than half a pea. On learning the symptoms, La Motte diagnosticated fracture of the inner table, though after careful examination, there was

found no injury of the outer table, and, on consultation, he decided to apply the trephine. A fissure of the inner table, right in the middle of the removed portion or disk of bone, was found, but no fluid effusion. The vertigo, etc., immediately ceased, and the patient made a prompt and good recovery. (*Traité Comp. de Chir.*, etc., 2me. ed., t. ii., p. 305, Paris, 1832.)

Bilguer, likewise, relates that at the battle of Torgeau, 1760, Colonel Von Losseau was wounded by a small bullet on the centre of the right parietal bone, in such a manner as to leave visible neither fissure nor mark of impression nor fracture. For three days he would not consent to trephining, but on the fourth day, beginning to fall into a stupor, he permitted the operation. It was not performed in vain. Four large pieces were found to have been knocked off from the inner plate, and the trephine had to be applied three times before they could be extracted. He perfectly recovered, and afterward held a command in the army. (*Chirurgische Wahrnehmungen*, p. 30. Berlin, 1763.)

Samuel Cooper met with a still more remarkable case of the same sort at Brussels, in 1815, after the battle of Waterloo :—

“The patient had been struck by a musket-ball on the right parietal bone, which was exposed but had no appearance of fracture; as, however, the symptoms of compression were urgent, and the patient was nearly lifeless, he conceived it right to trephine the part on which the violence had acted. He had not sawn long before the external table came away in the hollow of the trephine, leaving the inner table behind, which was not only splintered, but driven at one point into the membranes and substance of the brain, more than one-half an inch. The fragments were taken out with forceps; the man instantly sat up in bed, looked around, and began to speak with the utmost rationality. It was a most extraordinary fact that this patient got up and dressed himself the same day, without leave, and never had a bad symptom afterward.” (*Hennen's Military Surg.*, pp. 260, 261, Am. ed.)

Guthrie details the case of injury of the inner table without lesion of the outer table, related by Mr. Trye, of Gloucester, which was successfully treated by trephining, in 1786. Nine weeks after contusion of the right parietal, the external table being evidently dead, he applied a trephine, and found that the greater part of the inner table had been removed by absorption. There were granulations springing up. This man recovered. (*Injuries of the Head Affecting the Brain*, 4to., pp. 77, 78. London, 1842.)

Thus, I have mentioned six cases in which trephining was successfully employed to avert the consequences of this cranial lesion, and in three of them the nature of the injury was correctly surmised prior to the operation. But on the other hand, examples of this form of cranial fracture have been unsuccessfully treated with the trephine by Tulpus, by Le Dran, by Pott, and by Denonvilliers, in Europe; and by Hopkinson, Vosburgh, Fisher, and Bonteeou, in America, in our Military Hospitals during the civil war; amounting in all to eight instances which I have collected,

where the operation of trephining was unsuccessfully performed. It is, however, very instructive to note that in fourteen operations for this lesion there were six recoveries.

The *literature* of this variety of cranial fracture has been carefully examined by Guthrie (op. cit., pp. 73-79), and by the late and much esteemed Dr. Otis (*First Surgical Vol.*, pp. 150-159). Mr. Guthrie presents eighteen, and Dr. Otis thirty-eight examples that have been reported by European surgeons. The abstracts of these cases I shall not take space to present, but the practical lessons which they teach I shall earnestly strive to impart. When we add them to the twenty-five examples which have been reported, in recent years, by American surgeons, the total is raised to sixty-three, and we have before us for consideration a number of cases that is by no means wanting in respectability.

Etiology.—This branch of the subject has been thoroughly investigated, experimentally as well as historically, by the late Dr. Otis, who therefore stands in the front rank of all those who have spoken concerning it. He remarks as follows:—

“For centuries it has been taught that this form of fracture took place because of the greater brittleness of the inner table, and this explanation was accepted by the leading surgical authorities until 1865, when the experimental inquiries of Mr. W. F. Teevan, of London, proved that it was erroneous, and demonstrated that the cause of this fracture was not the brittleness of the vitreous plate, and was not to be sought for in any of the reasons heretofore assigned; but that it occurred in obedience to a well-known physical law, viz., that fracture always commences in the line of extension, not that of compression. It can be shown, experimentally that violence applied to the inner surface of the skull may produce fracture of the external table only, without any lesion whatever of the inner, and there is at least one pathological specimen in existence illustrating this form of injury.” (*Loc. cit.*, p. 157.)

The following is a brief description thereof:—

Specimen 1082⁷⁰, in Guy's Hospital Museum, is the calvarium of a suicide, who shot himself in the right temple with a pistol. The ball passed transversely clean through his brain, and struck the inner table of the left os frontis, where it lodged. At the point of impact there is a black mark, but no fissure nor fracture; at the corresponding point outside, however, there is a starred fissured fracture of the external table only. This specimen, then, furnishes conclusive proof that the brittleness of the inner table has but little to do with the causation of this form of cranial fracture. Mr. Teevan's explanation is, doubtless, the correct one. He aptly illustrates this variety of cranial fracture by the familiar instance of the cracking of a thin sheet of ice under pressure. Thus, fissures are often seen to occur on the under surface of the ice where there are no corresponding fissures on the upper surface; and the process of cracking or breaking always commences on the under or the distal surface. In bending a stick across the knee until it parts, it always begins to break on the side opposite to the spot where the knee is applied.

Dr. Otis also declares :—

“I have satisfied myself by a large number of experiments of the accuracy of Mr. Teevan's conclusions. I have had no difficulty in producing by slight blows with a hammer upon the outer or inner surfaces of calvaria, fissures or stellated fractures of the outer table only, or of the inner table only. In some of my experiments, portions of the vitreous table were detached without visible injury to the outer table; but in striking the inside of the skull, I was able to make fissures only in the outer table without injuring the inner. Dr. Beck's opinion, that fracture of the inner table of the skull alone occurs only in those parts where there is but little diploe is erroneous. It generally occurs in cases resulting from accidents, in parts of the skull where the diploe is abundant, and can therefore be more readily produced by experiment. The explanation offered in the Surgical Report of 1865, from this office [*Circular No. 6*], of the causation of this form of fracture, is imperfect. It is true that the fracture often results from a small projectile striking the cranium very obliquely, or sometimes, as Legouest suggests, from a comparatively slight blow from a body with a plane surface. But it is the degree of the force and not its direction when applied to the exterior of the skull, that is the essential point. A spent bullet, striking at right angles, may produce this fracture. If moving at a high rate of velocity, it will fracture both tables, or penetrate or perforate the skull. It is because the ball which glances, or strikes slantingly, acts with but little force at the point of impact, that it is the frequent cause of this injury. In the many cases in which I produced it experimentally, I hit the skull at right angles with moderate force, with a hammer a half inch in diameter at the face.” (*Loc. cit.*, p. 158.)

Mr. Teevan says :—“What is necessary is, that the bullet should not strike with much force.” He adds :—“In every case in which I produced it, it was by hitting the skull at right angles with but little force. Hence the kind of violence likely to cause fracture of the internal table only, is that resulting from a small stone, spent bullet, stick, or some body acting with a slight amount of force on a limited part of the skull, merely temporarily depressing, or bending the part struck.” (*Brit. and For. Med.-Chir. Rev.*, July, 1865, p. 196.)

Grima, more than one hundred years ago, correctly held that the amount of force of the impinging body must not be great :—

“De là il suit que si le coup n'a pas tout à fait le degré de force qui seroit capable de rompre des deux tables de l'os, il peut en avoir assez pour que la lame interne, plus mince que l'externe, se fende ou se fracture en éclats, sans que celle-ci pendra continuité. Un coup de fusil reçue horizontalement, la balle ayant perdu la plus grande activité de son mouvement, sur un casque a produit cette fracture de la table interne.” (*Mémoire sur les contre-coups. Couronné en 1766. Prix de l'Acad. Royale de Chirurgie*, t. iv., p. 257.)

The case referred to by Grima is doubtless that which was reported by Ambroise Paré, and which has already been presented to the reader.

In brief, the facts pertaining to the etiology of this lesion are : 1. When the skull is broken by a blow of any sort, except at the frontal or any other sinus, the fracture always commences in the side of the skull opposite to that which is struck. 2. The blow, in whatever way produced, must not be strong enough to break both tables.

Course and Terminations.—Concerning the consequences of cranial fractures when restricted to the inner table, Professor Stromeyer says :—

“These inner separations remain generally undiscovered, which is, in my opinion, lucky for the patient, because thereby he escapes the danger of being trepanned. It is not assuming too much to suppose that these cases would generally result favourably if the patient was subjected sufficiently long to an antiphlogistic diet; because the danger incurred by these cases is evidently less than

in others, where the access of air to the splintered part of the inner table takes place. For the older surgeons, who did not know the difference between subcutaneous wounds and those exposed to the atmosphere, the lesions in cases of head injuries formed a constant source of anxiety. They could not explain to themselves what would become of the secretion of the wound. We now know that when the atmosphere is excluded, and proper care is taken, the inflammatory exudation will become reduced to a minimum sufficient only to permit the healing process; while it will never become so much as to require an exit channel. One need not revert fifteen years in surgical literature to be convinced that an unfounded dread of the impossibility of an exit for the secretions of the wound were then considered proper indications for trepanning. The ample information which one of the most zealous advocates of trepanning, one who was an excellent surgeon as well as a truthful man, I mean Percival Pott, has given us in regard to the effects of trepanning, leaves no doubt as to the theory that the access of air increases suppuration. In most cases of simple contusions, in which he trephined on account of the formation of pus internally, very little pus was found at the first operation; yet the symptoms were generally aggravated, and trepanning was resorted to a second or a third time, and not until the secondary operations were great quantities of pus disclosed. Thus, as usual, one mistake brought about another, and one ill-advised use of the trephine rendered its repetition necessary. The main symptoms which seemed to demand trephining, for the majority of surgeons addicted to the trephine, consisted in the stupor or insensibility of the patient. It really requires no small degree of firmness of conviction of the danger of the trephine to see a patient, not only for days but for weeks, in a state of greater or less stupor or insensibility, without resorting to the operation, when, sometimes, complete consciousness is restored immediately by a successful elevation of the depressed bone, or the removal of extravasated blood. It is not enough to remind one that patients with typhus often remain for weeks in a still deeper stupor, and yet gradually resume the use of their mental faculties; nor is it sufficient to recall the innumerable cases where trepanning, notwithstanding the apparent success of its purpose of elevating depressed bone or of removing extravasations, did not influence the restoration of consciousness, but where this was only gradually regained by means of an antiphlogistic treatment. One must have observed as often the successful cure of head-injuries, without trepanning, to be enabled to acquire such accuracy of observation as nearly every physician possesses in regard to fever patients. Would not every one be called a miserable quack nowadays who would give a typhus patient musk, camphor, or serpentaria on account of stupor? It will not be long before no favourable estimate will be had of any surgeon who will use the trepan on account of comatose conditions alone. The campaigns of 1849 and 1850 have happily given many young surgeons the opportunity to convince themselves, with their own eyes, that one may look on a condition of semi-stupor for weeks without resorting to the trepan." (*Loc. cit.*, pp. 153, 154.)

Dr. Stromeyer's remarks, just quoted at length, would be all right enough if the occurrence of suppuration among the fracture-splinters were the main risk attending this form of cranial injury, and if cases where the inner table of the skull is broken, and its fragments are depressed upon or driven into the meninges and the substance of the brain, belonged to the same category as simple contusions of the cranial vault; for if they did, and the occurrence of suppuration among the fracture-splinters *per se* were the main risk, then the question of the admission of atmospheric air to the seat of injury by trephining or otherwise would be one of great moment. But Dr. Stromeyer is quite mistaken in regard to the nature, course, and consequences or terminations of this variety of cranial fractures, as is clearly shown by the histories of twenty-five cases of this

lesion which have occurred in recent years in the practice of American surgeons, as well as by the histories of many other cases of the same sort which are also related on or referred to in the foregoing pages. *First*, as to the nature of the lesion, we learn from these histories that in very bad cases the fragments of the inner table are completely detached from their bed, and driven through the membranes of the brain, more or less deeply, into the substance of the brain; that in other instances, while the fracture-splinters do not perforate the dura mater, they are completely detached from the surrounding bone on the one side, and separated from the dura mater on the other, whereby their supply of nutrient blood is entirely cut off, their vitality destroyed, and thus they become and so remain merely fragments of dead bone imprisoned within the cranium, and pressing in no friendly way upon the encephalon; and that, in still other instances, the fracture-splinters consist of triangular pieces of the inner table, whose bases remain connected with the surrounding bone, while their sharp summits are depressed against the dura mater, where they prick, and scratch, and tear the fibres of that membrane with every pulsation of the brain. Surely, these lesions bear no resemblance whatever to contusions of the cranial bones, and recovery therefrom is next to impossible so long as the sharp fragments of dead broken bone are allowed to remain sticking into the brain itself or pressing against the meninges. *Secondly*, as to the course of cranial fractures limited to the inner table, the clinical histories of the cases above mentioned show that these fragments of the inner table, when permitted to remain unextracted, almost invariably excite inflammations of the membranes or substance of the brain, which are not amenable to any plan of treatment so long as the fracture-splinters which cause them continue to exert their baneful influence upon the encephalon; that the loss of consciousness and the coma which attend the advanced stages of such cases are generally due to the products of this traumatic meningo-cerebral inflammation, and that they bear no resemblance whatever to the hebetude and stupor of typhus in respect to causation, character, and requisite treatment. *Thirdly*, as to the terminations of cranial fractures restricted to the inner table, the clinical histories of the cases above mentioned also show that this traumatic meningitis and encephalitis usually ends in speedy death, unless the causes thereof, the imprisoned fragments of the inner table, are liberated and removed by the timely performance of the operation of trephining. Out of sixty-three cases of this lesion related or referred to in the foregoing pages, but seven recovered, and six of them were saved by trephining. In only one instance did the patient get well without that operation, and in this case the broken part of the inner table consisted of but one fragment, which was of large size and but slightly depressed. Moreover, this piece of dead bone was liberated and removed by nature from its place of

confinement within the skull by a proceeding closely analogous to the operation of trephining.

Thus, it is clearly proven that Stromeyer's bitter criticism of trephining, when performed for the relief of cranial fractures restricted to the inner table, is wholly unwarranted by the facts. Indeed, in preparing it, he seems to have drawn upon his "inner consciousness" for his data instead of his clinical experience, and upon his imagination instead of his surgical observation; and there are good grounds for retorting in kind and asking the following question: "Would not every one be called a miserable quack nowadays who would" rely exclusively upon antiphlogistics in the treatment of inflammations of the membrane and substance of the brain when caused by dead fragments of the inner table pressing upon the encephalon in cases of cranial fracture restricted to that table; and who would, therefore, refuse to fulfil the causal indications by extracting these pieces of dead bone by operation, lest air might get into the place of fracture? In such cases recovery without the operation is impossible, and by refusing to extract the dead fracture-splinters by the seasonable performance of trephining the patient is deprived of the sole chance of escape from an otherwise inevitable death. I have discussed Prof. Stromeyer's criticism at considerable length, not so much because it is unjust, as because it is likely to lead to erroneous practice.

Allegations, such as those made by Dr. Stromeyer and others of a similar character or tendency, if unfounded, are calculated to do immense harm, especially when allowed to go unchallenged. For that reason, I was originally lead to inquire, at the expense of considerable time and labour, into the whole subject-matter of this lesion, and to present the results to the reader in as brief a form as seemed compatible with clearness or intelligibility.

The superior longitudinal sinus was pierced by a splinter from the inner table, in the first case related above; blood was extravasated in great quantity, and, in default of an operation, death from cerebral compression ensued in thirty hours. In the following example, the middle meningeal artery was lacerated from the same cause, and death ensued in three and one-half hours:—

CASE VII. At a meeting of the Edinburgh Medico-Chirurgical Society, held on June 4, 1862, Mr. Edwards showed a preparation from a boy who had been killed by a cricket-ball. Some boys were playing one evening in a field; a cricket-ball was thrown up, and struck the deceased, a muscular lad, on the right temple. He staggered but did not lose consciousness, and complained little of pain. He came home about 8 o'clock, and soon after became sick and vomited. Mr. Edwards saw him at 9 o'clock, and ordered cold cloths to be applied to his head. Soon afterwards he became delirious, snatched off the cloths and tossed himself about; he slept occasionally, and in the intervals expressed great anxiety that the boy who had thrown the ball should not be blamed. He ceased to recognize his friends, became gradually comatose, and died three and one-half hours after he received the blow. On *post-mortem* examination, there was no bruise found on the head. On reflecting the scalp, however, there was a very scanty

extravasation of blood found beneath the temporal aponeurosis on the right side. There was no fracture of the external table of the skull; but there was a slight crack which extended across the inner table. The middle meningeal artery ran in an osseous canal at this part. A small piece of bone was broken off, and the artery was completely torn across at this point. A clot, half the size of the fist, lay between the cranium and the dura mater, and the corresponding portion of brain presented a distinctly bruised appearance. (*Edinburgh Med. Journal*, vol. viii. p. 191.)

The operation of trephining, when performed in season, almost always saves such patients, especially if an antiseptic after-treatment be employed.

Concerning the final issue of this lesion Dr. Otis remarks: "It cannot be doubted that many cases of this form of injury terminate favourably, and are never recognized" (*loc. cit.*, p. 158). But he presents no clinical nor anatomical observations whatever to support this opinion. It is not improbable, however, that this view is correct; but, so far as I am informed, the only foundations for it are a few facts revealed by autopsies which I have mentioned in the fore-part of this article, and the inherent probability that mere fissures of the inner table without displacement not unfrequently occur and unite again without exciting any trouble. It is not this form of the lesion which has most interest for surgeons, but the forms in which no successful plan of relief, except timely trephining, has yet been devised, many examples whereof I have mentioned.

Diagnosis.—The cases related above clearly show that this lesion can, not unfrequently, be diagnosticated with considerable certainty prior to operation or to autopsy. But so long as the text-books in common use make no mention of this lesion, or barely state that it is very rare, just so long will it escape recognition in many cases where otherwise it would be detected without much difficulty. Bontecou, having examined some preparations of this lesion belonging to our Army Medical Museum, correctly surmised its presence in a case of gunshot scalp-wound, and verified the diagnosis by applying a trephine. Unhappily, an abscess had formed in the brain, suppuration in the diploë also had occurred, the symptoms of pyæmia had already appeared, and thus the operation, though performed as soon as evidence of compression existed, was too late to save the patient. (*Circular No. 6*, November 1, 1865.) So, too, with other surgeons.

Imprimis. This lesion is met with only in patients who have sustained some form of injury which may readily cause a cranial fracture, for instance, gunshot wounds of the scalp, blows on the head inflicted with stones, clubs, cricket-balls, etc. If, then, the phenomena usually referrible to fractures of the cranial bones appear in any case where some form of injury has been received that is apt to cause such fractures, and ocular examination shows the external table to be not broken, it is generally right to surmise that the internal table is fractured and depressed. There are two kinds of cases in which the diagnosis can be made with almost

absolute certainty: 1. When, after the blow on the head, no evil consequences arise, at first, but, after the lapse of some days, the patient begins to complain of a fixed pain in the part struck, and all the symptoms of cerebro-meningeal irritation and inflammation follow, although no lesion is discernible in the outer table, as happened in Case V., related above. 2. When the patient recovers consciousness soon after the blow, but finds there is paralysis of some part of the body opposite to the side struck, and examination fails to detect any lesion of the outer table, as happened in the following instance: At the battle of Vienza, in 1848, a soldier was struck by a shot over the right parietal bone. He instantly became unconscious and fell, but soon recovering, remarked that his left arm was perfectly paralyzed. Dr. B. Beek found the bone completely bared, but no external trace whatever of fracture. Nevertheless, he diagnosed a fracture of the inner table with depression, because the paralysis of the left upper extremity could only be explained by pressure so produced. Ice, calomel, etc., were ordered. On the eleventh day the symptoms of cerebral irritation became more severe; instruments for trephining were sent for, but, before they arrived, the man perished on the fifteenth day after the casualty. The *autopsy* showed that there was scarcely any diploë, that the inner table presented a cruciform fracture, and that there were inflammatory changes in the bone, meninges, and substance of the brain. (*New Syd. Soc. Year-Book*, 1862, p. 269.)

La Motte thought, that when the inner table alone was broken, the lesion might be detected by a peculiarity in the resonance of the skull under percussion, and cites a case illustrating this idea. (*Obs. de Chirurg.*, t. ii. p. 303.) Atthalen, of Besançon, held the same opinion, and adduced an interesting case which happened in 1746. Professor Stromeyer also attaches value to this mode of exploration. He says:—

“By means of percussing with a silver probe, I was enabled in one case, where there was only a barely perceptible fissure in the outer table, to diagnosticate the extent of the inner separation accurately, and after the decease from pyæmia, in this same case, many of the young surgeons had the opportunity to convince themselves of the correctness of my diagnosis. Any of them who possessed a practical ear could discriminate the sounds when percussing the outer table at the point of the internal fracture, or at other parts of the cranium. At the point of the internal fracture the pitch is somewhat higher. Lanfrancus and Ambroise Paré, I find, already knew of this diagnostic expedient.” (*First Surgical Vol.* p. 153.)

Percussion of the skull with a silver probe in the way described by Stromeyer can unquestionably be employed with advantage in cases where fracture of the inner table is suspected.

But, when the surgeon is not unmindful as to the possibility of this lesion, a correct diagnosis can often be made by exclusion, as was done in a considerable number of the cases that are mentioned or referred to above.

Treatment.—Simple fissures of the inner table which re-unite without giving trouble, will not require any special treatment. But, when inflam-

matory symptoms arise from this lesion, they must be combated by cupping the neck, by shaving the head and applying an ice-bag, by administering purgatives and calomel, by a spare diet and absolute quietude. Should these measures fail, but, especially, should the symptoms of irritation and compression of the brain increase in spite of this treatment, trephining must be resorted to without delay. Moreover, the cases by B. Beck, Guthrie, S. Cooper, Bilguer, Garengeot, Paré, Hughes, and Triplett, as well as others that are mentioned above, very clearly show that mere medical treatment must prove ineffectual in cases where the splinters of the inner table are depressed, and that the operation of trephining affords a reasonable, as well as the only prospect of saving such patients, especially if it be seasonably employed.

When extravasation of blood upon the brain with compression thereof results, as it did in Cases I. and VII., the coagulum must be exposed without any delay by trephining, and removed, with antiseptic precautions and antiseptic after-treatment.

ARTICLE II.

OVARIOTOMY: DIFFICULTIES DIAGNOSTIC AND OPERATIVE; CONTINUED
MENSTRUATION AFTER DOUBLE OVARIOTOMY. By GEORGE J. ENGELMANN, M.D., Prof. of Obstetrics in the Post-Graduate School of the Missouri Medical College; Consulting Surgeon to the St. Louis Female Hospital, and St. Anne's Lying-in Asylum, etc.

At the recent meeting of the American Gynæcological Society in New York, in September, 1881, Dr. T. G. Thomas read a paper entitled, "Extensive Adhesions of the Bladder as a Complication of Ovariectomy;" in this valuable and instructive paper, Dr. Thomas relates some four or five cases in which he had encountered this unforeseen and trying condition, all of which resulted fatally. Fortunately this complication is not of frequent occurrence, and but few of the many experienced operators present expressed themselves as having encountered such extensive adhesions as those found by Dr. Thomas, by which the bladder was drawn up toward the umbilicus, and spread out over the anterior surface of the tumour; literature, he says, furnishes us with but seven cases of this character, in all of which a fatal issue has resulted in consequence of the adhesions, either directly from the injury done the bladder, or indirectly from failure to remove the tumour on account of their existence. The danger arising from such a condition of affairs is readily apparent, especially, if so experienced a diagnostician as Dr. Thomas tells us that it is rarely possible to detect these adhesions beforehand, and thus guard

against that almost inevitable accident, the opening of the bladder; by reference to his paper it will be seen how ingeniously he has, in one or two cases, remedied the injury when done. In the discussion following it was my good fortune to be enabled to relate the successful termination of an ovariectomy thus complicated, one of the few cases of the kind on record.

My attention having been once directed to the very serious results threatened by these extensive adhesions of the bladder, in the operation of ovariectomy, I determined at some opportune time to relate this case more fully; in doing so I will also call attention to difficulties in the diagnosis of certain conditions which it is of the utmost importance to determine before engaging in an ovariectomy; conditions which unfortunately it is often impossible to overcome, notwithstanding the very clear and definite rules laid down in text-books.

I will give in detail two cases in which I have encountered these difficulties in diagnosis, and, although it appears to me that it will be almost impossible to avoid these errors, they will at least serve to caution the operator to guard against them, and not to rely too firmly upon the rules in his text-book. The difficulties I refer to are:—

1. Of determining the existence of adhesions, however firm, to yielding parts.

2. Of differentiating between tumours.

- (a) Uterine and ovarian.

- (b) Fibro-cystic and colloid.

3. Of detecting the elongation and attachment of the bladder.

The same cases will also serve to illustrate certain features which have appeared to me as of importance in the operation, and which I would emphasize, either because they are usually neglected as too insignificant, or because my practice differs therein from that usually followed. I merely propose to give a few practical hints, and by no means to map out a guide for the operator. I would urge—

1. A regard for the safety of the enlarged bladder.

2. The importance of securing deep and firm union of the abdominal incision, in order to avoid hernia in the convalescent.

3. The importance of the free use of the ligature, and of relying upon fine braided silk cut short.

4. Care in the use of carbolic acid.

5. The early operation, if an operation is at all indicated.

The two following cases will, I believe, best answer our purpose.

CASE I. Colloid Tumour of the Right Ovary; Cystic Degeneration of the Left; Peritoneal Cysts; Extensive Adhesion of the Elongated Bladder: Double Ovariectomy; Continued Menstruation.—Mrs. T., from Kansas City, consulted me in April, 1880, on account of failing health due to an abdominal enlargement, of less than a year's growth. The patient was 32 years of age, the mother of five children, the youngest being two and a half years old. She first menstruated in her thirteenth year, and was

regular ever after, suffering no pain: her labours were easy, and recovery rapid and complete; in short, she always enjoyed excellent health, and at no time complained of backache or any abdominal pain. In the spring of 1879, one year before I was called in, she first complained of a certain lassitude, not of any particular pain, but felt weak and miserable. This slowly passed away, and in the fall she again felt perfectly well.

In September, she noticed for the first time, a certain abdominal enlargement; but being in good health, she thought herself two or three months pregnant, although her menses were still regular and even more profuse than formerly, the flow being very free and continuing for seven days instead of four as usual. She continued well, although the tumour grew rapidly until December, when she noticed a certain emaciation and a disagreeable backache; experiencing at the same time a feeling of distension in the upper part of the abdomen; but about Christmas time the swelling or tumour seemed to descend, and this distension was relieved, whilst the abdomen seemed to feel more full in its lower portion. The growth of the tumour had apparently ceased, and there was no noticeable increase since December. The patient felt comparatively well, had lost some flesh, was a little weakened, and her appetite was somewhat impaired; still, upon my first examination, she appeared to me in very fair health.

I found the abdomen distended by a smooth, semi-solid, or, if I may use the expression, soft-solid growth of, apparently, like density throughout, resembling in feel a rapidly growing fibroid; it was freely movable, and I accordingly considered it non-adherent, more especially as there was no history of peritoneal inflammation, or even peritoneal tenderness. The tumour was remarkably movable, gliding from side to side as the patient turned in bed, and being readily rolled by the hand over the projecting spine; the uterus also was movable independent of the tumour, and between both there appeared to be no connection. The upper border of the tumour was four and one-half inches above the umbilicus, and extended six or seven inches on either side. A friend, who saw the case in consultation with me a few days later, discovered a slight but distinct fluctuation about and below the navel, which I had not observed in my previous examination, as it either did not exist at the time, or had been overlooked by me; and he was accordingly disposed to consider it a fibro-cystic tumour, probably of the ovary. I looked upon the case as one favourable for operation on account of the good health of the patient and the absence of adhesions as indicated by the mobility of the tumour. She however hesitated until the rapid growth of the neoplasm, evident even to herself and friends, induced her to consent to surgical interference. The increase in size was very marked in the last ten days before the operation. She was carefully prepared, the bowels were freely moved, the urinary and cutaneous secretions stimulated, warm baths were taken daily, digestible and nourishing food—meat and milk—advised, tonics given, and large doses of quinine immediately before the operation.

Thursday, April 22, 1880, I operated, in the presence and with the assistance of Drs. Prewitt, Schenck, Engelmann Senior, Nelson, and Fischel. The urine was removed as usual, but neither was the quantity very large nor did the catheter pass beyond the ordinary depth. The room, which had been deprived of carpets, thoroughly cleaned and ventilated for the past few days, was kept at a temperature of 76° and over, and the atmosphere thoroughly saturated with moisture. Flat vessels

with hot water, carbolized, were placed upon the stove and distributed about the room, and two sprays were used; one had been directed upon the couch and bedding for some time before; during the operation itself, the sprays were not directed upon the abdomen of the patient, into the open wound, but from a distance, upon the operators, more for the purpose of saturating the atmosphere with the carbolized moisture than for the purpose of operating directly under the spray, so benumbing to the hands of the operator, and, as I firmly believe, injurious to the exposed peritoneum, and dangerous to the rapidly absorbing surfaces of the numerous and freely exposed raw surfaces.

Hardly had the abdominal incision been made when our troubles began. I felt sure that I had cut through the peritoneum in the upper part of the incision, which extended as usual from the umbilicus to within three-quarters of an inch of the symphysis (I dislike to cramp myself by a small opening, and believe the danger from injury to the parts in manipulating through an unnecessarily small opening to greatly exceed that arising from a few inches more of incised tissue); but instead of cyst-wall or intestinal coils, I saw a thick, soft, purplish tissue, continuous with the abdominal wall. What was it? it appeared like the thickened wall of, perhaps, a suppurating ovarian cyst, but I thought that I had penetrated the peritoneal cavity, and this tissue was apparently a part and constituent of the abdominal wall. In the dilemma I endeavored to feel the way with my finger towards the upper angle of the incision, and separated this thickened tissue a trifle from the abdominal wall, whereupon a number of delicate whitish cysts, of the size of a hickory-nut, attached to long, slender, thread-like pedicles, slipped out from the opening as a second surprise. As small cysts are not likely to appear in the peritoneal cavity, we supposed them to be either intestinal coils or small cysts coming from the interior of a large one, and that we must have cut through a cyst wall in the first incision. Dr. Prewitt replaced them several times, and still they reappeared; then he pulled them out; the more he pulled the longer they became, and as the experiment appeared a dangerous one, they were tucked back. Later in the operation they again appeared, when I tied several of the thread-like pedicles and cut them off. As soon as I was enabled to insert my finger well into the opening, I felt beneath the smooth surface of the tumour and over it, this thick soft purplish tissue which had puzzled us, apparently the omentum, adherent partially to the tumour, partially to the anterior abdominal wall; I now, with my finger, began to separate the adhesions, as far as possible, from above downwards and toward the right, where, of course, I had most space, the omentum being far to the left. As I progressed the true state of affairs became evident: the omentum was thickened, perhaps to the extent of one-third of an inch, and was adherent in part to the anterior abdominal wall, to the bladder, and by one firm broad band, some three inches in breadth, to the tumour; the attachment to the bladder had become so firm, and so intimate, the thickened omentum and the elongated, distended, and thinned bladder appeared so much alike, that it was only by introduction of the catheter that we could detect the fundus of the bladder, almost at the umbilicus. Two silk ligatures, not carbolized, were placed about the lower portion of the omentum, just above the upper border of the bladder, as indicated by the sound, and then this mass of heavy tissue divided by the scissors; so also was the long, but very broad and thick, portion of omentum attached to the tumour tied and cut. Braided silk of medium thick-

ness was used, and before we were enabled to free the tumour completely, many more ligatures of the finest braided silk were applied. Numerous delicate adhesions, thin long bands, which appeared at every point, were severed. The tumour was now exposed, and proved to be a smooth, round, colloid mass, which I could not but liken to an orange watermelon, after the rind has been removed, on account of its peculiar sections and the absence of any cyst wall or decided outer covering; it was a uniform, colloid, thickly gelatinous mass, simply a little more consistent toward its circumference, but not inclosed in any distinct capsule. It was too large to be removed through the opening, too soft to be cut to pieces, so that I was obliged, after the patient had been turned upon her side and the tumour dragged into the incision, to elaw out this glutinous, colloid mass, by the handful; when it was sufficiently reduced in size to be dragged out, the long pedicle was tied and dropped.

Upon examination the left ovary also was found to be diseased, containing a cyst the size of an orange; this was tied and removed. Six or eight of the delicate little cysts, which at first so annoyed us, still remained; I followed their pedicles to the upper surface of the liver, in the vicinity of the diaphragm, and there tied them. The liver itself was normal and healthy, with a perfectly smooth, transparent, peritoneal surface, and the cysts were in no way connected with the organ itself, but evidently originated from the peritoneum in the neighbourhood of the line of attachment of the liver and diaphragm.

A great deal of time was consumed in thoroughly cleansing the abdominal cavity, as there had been some little oozing, and, moreover, some of the glutinous contents of the tumour had escaped, and were hard to remove; so many larger adhesions had been severed, as well as innumerable smaller ones, that it was some time before I had any certainty that all the vessels had been secured, and the bleeding completely stopped. Most patiently and thoroughly was the abdominal cavity cleansed with warm, soft sponges, well wrung out in pure, hot water, not disinfected; the deep chasm behind the uterus and the surface of the distended and adherent bladder were special objects of our care. Four ligatures of heavy silk, and twenty or more smaller ones were left in place, and the incision closed with heavy silver wire clamped by shot; the ligature, which had been placed above the fundus of the bladder, was fastened within the incision; the others cut short and dropped. I applied my usual dressing, varying from the routine of Lister by the use of carbolized cotton in place of the gauze. We were all grateful when the patient was placed in her bed still breathing and with a fair pulse.

The patient suffered no pain at any time after the operation, with the exception of the first afternoon, when she awoke after a long and healthy sleep from the effects of the anæsthetic; this pain was readily relieved by a small injection of morphine, and, during the rapid convalescence which ensued, the only discomfort experienced arose from the stitches, which I had left in place longer than necessary, being fearful of removing them too soon on account of the severity of the operation, notwithstanding that union by first intention ensued.

During the first day after the operation she was nauseated, and could retain nothing but champagne. But that evening she began to take iced milk, which remained her most important article of diet throughout. Pulse on the second day, eighty-four; on the third, eighty-six, morning and evening, with a temperature of one hundred and one; this was the highest

temperature. Upon the fourth day the pulse was eighty-two, temperature ninety-nine and five-tenths, and the morphia, which she did not tolerate very well, was then stopped and not again resorted to. The symptoms were favourable, and the patient steadily improved, sleeping well, relishing her milk and beef-tea. No more narcotics. On the ninth day (not my usual practice, but here indicated) the bowels were moved by an injection of soap and water, and the dressing changed for the second time, and from now on the wound was dressed in cotton steeped in carbolized oil, and covered with oiled silk. The bowels moved naturally on the eleventh day, and not until the sixteenth day did I remove the stitches which had cut and annoyed her considerably for the last few days. I was careful to have the abdominal wall secured by strips of adhesive plaster, and, as long as she was still in bed, by a well-fitting bandage of home make. As soon as the patient was able to sit up and move about the room, the abdomen was supported by a firm well-fitting bandage, made for her by Mr. Schleifarth. I look upon this as a most important matter, and call especial attention to it, as I have seen some unfortunate results from neglect of proper prevention at this period.

When patient returned home, I insisted upon the greatest care, the wearing of the bandage, abstinence from exertion of any kind, attention to diet, fresh air, and suitable exercise. Although in the main she attended to her household duties throughout the fall, it was not until the following spring that she fully resumed them, and the consequence is that she now enjoys the most perfect good health, is strong and hearty, with a rosy, healthy complexion, dispenses with her bandage, and is able to endure any exertion whatsoever.

Notwithstanding the removal of both ovaries, menstruation continues regular; patient menstruated April 15th, on the 22d I operated; the next menstruation appeared May 18th, quite profuse for four or five days. This was on Monday, five weeks after the last normal menstruation; then three weeks later she again became unwell, Thursday, June 10th; this was resuming the early habit, coming back to the regular time she was accustomed to before the operation. She experienced very little backache, there was no pain, and the flow was free. The next was July 10th to 14th; then a slight flow from July 30th to August 1st, and again August 10th to the 11th. After the operation the flow became more scanty, but there was no pain, and very slight backache. I now supposed that the discharge would grow more scanty and cease, but, on the contrary, after the slight irregularity, menstruation again became normal and regular, and so continues up to date, November 28, 1881.

Mrs. T. is in the full enjoyment of a happy home and family life, full of love and devotion to her husband, children, and friends; a charming lady, in full possession of all womanly attributes, performing every womanly function, wanting only the power of conception, ovulation in this case not accompanying menstruation. I cite this with special reference to those authors who maintain that after the removal of the ovaries women lose their special attributes; the voice becomes harsh, the figure angular, love ceases, etc. Though this be not so, it is true that in the majority of cases menstruation ceases. Peaslee, in his work on "Ovarian Tumours," says that menstruation, or what he calls metrostaxis, con-

tinued in only six of all the cases of double ovariectomy known in literature. The function in this instance is so regular and so perfectly like to that experienced before the operation, that I must call it menstruation and not metrostaxis. The specimens in my possession preclude the possibility of a part of an ovary having remained *in situ*, and thus accounting for the continuance of the flow.

Spencer Wells discusses at great length the question of how to deal with the pedicle in double ovariectomy; in times of the clamp it was, indeed, a question; but now I would advise, as I did in this case, to tie and drop, unless, perhaps, the clamp or cautery were indicated, by special reason, for one or the other of the pedicles.

CASE II. *Suppurating Ovarian Fibro-cyst*.—Was called to Belleville in July, 1875, to see Miss Susan X., aged 37, a tall, somewhat angular, slightly anæmic brunette, who had been suffering from uterine hemorrhages. Patient had never complained of backache, bearing down, or abdominal pains, although she sometimes had experienced a feeling of constriction—indistinct constriction of the abdomen. Appetite was moderate, stools regular, inclined to be loose, passages of urine normal; but her early history was rather peculiar, and, I think, indicative of the character of the abdominal enlargement, which she had not noticed until recently, but which the physician in attendance claims to have observed years ago. Menstrual flow first appeared in her thirteenth year, and came in irregular intervals, but always on the same day of the week, Monday, sometimes Sunday; never profuse. At eighteen she took cold whilst washing during the continuance of the menstrual period; profuse flooding followed, and with it the catamenia ceased entirely until her twenty-first year, when she was prostrated with typhoid fever and again had a faint flow for several months. For the next twelve years amenorrhœa existed, until she was thirty-three, when she was again sick for several weeks, and again there was a return of the menstrual flow; it soon ceased, however, not reappearing until three years later, in her thirty-sixth year, in the fall of 1874. In April, 1875, profuse flooding set in, which was almost continuous, sometimes ceasing for a few days, but returning more markedly for three weeks, when, clotted blood escaping, considerable relief followed; she being always relieved when a large clot of blood passed.

External examination showed the abdominal wall relaxed, readily revealing a tumour resembling the gravid womb of the fifth or sixth month. The tumour is somewhat ovoid, larger above, situated about the median line, extending downwards and behind the symphysis. Its surface is apparently smooth, with the exception of a distinct protuberance at its left upper extremity. It reaches almost to the navel, and on either side to within one and a half inch of the anterior superior spine. A vaginal examination showed the labia somewhat congested; the introitus narrow; vaginal portion small, looking toward the sacrum; in the anterior cul-de-sac, in the position of the anteflexed corpus uteri, is a hard round growth of the size of an apple, which seems to move with the large mass of the tumour, although external pressure produces only a very slight motion. A solid, hard, round, apparently movable mass lies in the hollow of the sacrum, and cannot be separated from the vaginal

portion; both appearing equally movable. Sound would not enter beyond the depth of a quarter of an inch.

After repeated dilatations with sponge tents, I was enabled to introduce a sound to the depth of two inches, and to apply iron to the cavity. Advised rest and ergot, Squibb's fluid extract, first one-half teaspoonful twice a day, later one teaspoonful twice a day, tonics, vaginal injections with tannic acid. This was July 18th. Flooding soon ceased. Ergot was borne well. August 12th a slight flow of blood reappeared, scarcely, however, staining the linen. August 20th, found the patient looking better, considerably improved; had gained four pounds, and the tumour had been reduced in all dimensions. Subcutaneous injections of ergotine were now made, in order to relieve the stomach; and, as has been my experience ever since, I found that the alcoholic solution was much better borne than that in glycerine, as was originally recommended by Hildebrandt, who first advised ergotine injections in uterine fibroids. Hildebrandt's formula was: Ergotin. 3.0 (grammes); glycerin., aquæ, āā 7.5. M. S. One syringeſul = $0.2 = 3$ gr. ergotin. I used: Ergotin. (Bonj. French aq. extr.), 3ss; alcohol., aquæ, āā 3j; morph. sulph., gr. 1. M. S. One syringeſul = 4 gr. ergot, $\frac{1}{7}$ gr. morph. Injections of this solution were made daily for one week by Dr. Rubach, and caused a sensation of uterine contractions; the patient not feeling well during the time; but the effect was soon visible in a still further decrease of the tumour and in the great improvement of the patient. After the cessation of injections, ergot internally was again resorted to, and continued with one or two day's intermission each week.

Patient continued to improve steadily until October first, when her weight reached 143 pounds, thirteen pounds more than when I first saw her. The tumour now again began to grow both upwards and downwards. I again dilated with a sponge-tent, and was enabled to pass the soft rubber catheter through the tortuous canal to the depth of five inches, although I could not introduce the sound farther than before.

I was in a dilemma as regards the diagnosis: the history of the case pointed to an ovarian disease—the cessation of the menstrual flow, without the appearance of menstrual molimina, the early appearance of the tumour on the right side; on the contrary the recent flooding, the greatly enlarged uterus and its tortuous canal, together with the decided effect of ergot upon the size of the tumour led me to suspect a uterine fibroid, moreover there was a solid tumour in the posterior cul-de-sac apparently immovably connected with the uterus; but especially the decided reduction in size of the tumour by the continued use of ergot caused me to believe that this was a case of uterine fibroids,—submucous, as well as intramural or subserous. The operation by the vagina and uterus was impossible as there certainly were subserous tumours; and the extirpation of the entire uterus appeared to me, at the time, so formidable an operation that I was unwilling to advise it until more urgent symptoms should appear. This was a fatal error, though justified by the rule in vogue at the time, and unfortunately still in vogue among surgeons in this Mississippi Valley, of not operating until life is endangered; actually this was the time to operate; an operation was inevitable, now the patient was in the best of health and spirits, the tumour decreasing in size, digestion good, in short now was the time to operate, now her chances were best. In this one case I have experienced the error, and in many another has the sudden death of the patient from rapid growth of the tumour carried her away,

whilst she was waiting for that moment to come when "the tumour should endanger life" which she herself and her attending physician considered the proper time to place her in my hands for operation—before that it would be rash to endanger life by an operation—that terrible and fatal error which still brings death to many a door in this valley. The hemorrhages again made their appearance in January, 1876, fever came, appetite was poor, the patient was even nauseated at times. Stool was thin, intense pain in the right side was experienced, and for a short period in December intense pain accompanied by stitches in the bowels. In January fever increased, difficulty of breathing and loss of appetite were accompanied by a severe pain in the left upper part of the tumour; the cervix seemed enlarged and hard, and that small tumour in the posterior cul-de-sac was extremely tender to the touch.

Patient was brought to the city in January, and was put under treatment, receiving the most delicate attention and careful nursing from friends who accompanied her. She improved somewhat; pulse and temperature, which throughout January had reached 108 to 140, averaging 120, and 100° F. to 102° F., were somewhat reduced in February, when her pulse remained at 84 to 90, and her temperature about 99.4°. Her condition then appeared at its best, and no farther improvement could be attained, hence the operation was decided upon. The slightest accident, neglect, or imprudence would have caused a relapse and probably a rapidly fatal result in consequence of the incipient pyæmia. The case being a questionable one, she was seen in consultation by several esteemed friends, one of whom gave it as his opinion that the tumour was carcinomatous on account of its recent rapid growth and rough uneven surface and transverse enlargement, for which reason, as well as the immobility of the tumour, he advised against the operation. Another advised me to wait with the operation, as her condition seemed to improve, until the inflammatory stage should have subsided. He correctly diagnosed fluctuation of the left upper portion of the tumour, and an indistinct fluctuation with possibly a thicker fluid—a formation of pus following the inflammatory condition of the tumour in the right upper portion. To me, also, the physical examination revealed the condition last described, fluctuation in the left upper portion with a thicker fluid near the right and solid fibrous masses in the central and lower portions; possibly the inflammatory condition may have been due to the too free use of ergot, as Byford claims that it so occurs. The uterus was very much enlarged, was now immovable, and apparently a mass of solid, hard tumour was wedged in between it and the hollow of the sacrum, so that the condition accordingly appeared to me as that of a suppurating fibro-cyst of the uterus; as the patient's general health did not improve but appeared at its best with a threatening decline and coming pyæmia, I advised the operation.

On February 13, I prepared to operate, with the kind assistance of Drs. Hodgen, Baumgarten, Boisliniere, Schenck, Nelson, Fischel, and others. I was prepared to remove the uterus, clamping the cervix, and was considerably surprised, as the operation advanced, to find that we were dealing only with a fibro-cyst of the ovary. The operation presented no peculiar features, with the exception of the difficulties consequent upon numerous delicate adhesions, partially to the abdominal wall and partially to the intestines, and the difficulty of raising the tumour, on account of the firmness with which the lower fibroid mass was wedged into the hollow of the sacrum, and it was only by strong traction that it came out, and

that with a distinct thud. The pulse during the narcosis was at 80, but within an hour after the operation it began to increase in rapidity, and as pulse and temperature slowly rose, the respiration grew more rapid. The patient steadily failed from the moment she fully recovered from the effects of the anæsthetic until she died, thirty-six hours after the operation, notwithstanding the most careful attention and devoted nursing.

The *post-mortem* examination by no means distinctly revealed the cause of death. There was no peritonitis, nor had there been any oozing, no blood was found in the cavity, but some thick yellowish lymph with only slight serous exudation. The abdominal wound had well united, and a thick covering of lymph had been thrown about the pedicle, as well as several of the larger adhesions which had been tied with ligatures, and also the posterior portion of the bladder.

The operation was performed in the early days of Listerism, and I have often reflected upon the peculiarity of the symptoms, the rapid and steady decline from the moment the patient recovered from the narcosis. The sponges, for days, had been soaked in carbolic water; carbolic acid was freely used in the water in which the sponges were cleansed; the instruments were kept in a five per cent. solution, and the sprays had been directed well upon the wound.

DEDUCTIONS.—I have endeavoured to relate the histories of the preceding cases as briefly as is consistent with the objects of this paper, and as pointedly as possible, in order to call attention to the difficulties which present themselves, omitting self-evident or well-known points, in order that others may profit by my own accidents or misfortunes, and to show how unreliable many points and rules laid down in text-books may prove when tested in practice, how cautious the operator must be, and how decidedly each case must be judged upon its own merits, how imperfect our supposedly perfect means of diagnosis have proved, and how helpless they leave us. I will call attention to a few of the difficulties, diagnostic and operative, encountered in these cases, which I believe it will be well for the surgeon to bear in mind.

Hints as to Diagnosis. 1. *The Difficulty of Determining the Existence of Adhesions to Yielding Parts.*—(a) In Case I., it will be remembered, the tumour was smooth, round, and freely movable in every direction, rolling from right to left over the promontory of the sacrum. Freely movable up and down, movable independent of the uterus, moving as the patient moved herself from side to side. The abdominal wall was freely movable over the tumor, and no history of abdominal pain or inflammation existed; and yet, upon opening the abdominal cavity a most discouraging condition was revealed: unusually heavy, strong adhesions of the omentum to the tumour, of the bladder to the abdominal wall, and of the bladder to the tumour; but these were all lax, movable organs, attached by long bands of adhesions. The surface of the tumour itself was smooth, hence it was a condition impossible to diagnose.

(b) A similar condition of affairs I found existing in a case recently related before the St. Louis Obstetrical Society, in which I attempted

Frcund's Operation for the removal of the cancerous uterus, and was deceived by a similar mobility of the womb. It was freely movable in every direction, and the omentum, bladder, and intestines were attached to it, forming dangerous adhesions, but in no way impeding the mobility of the organ.

(c) In Case II., we find a completely immovable mass, a firm, hard portion of the tumour which lay wedged in between the sacrum and the uterus, apparently immovably connected with the latter organ; and yet it was only held in place by mechanical impaction, the pelvis being filled out by the fibrous portion of the tumour in front of the uterus, the uterus and the tumour in the hollow of the sacrum, and this was so firmly wedged in, that the absolute immobility naturally led us to look for serious adhesions: fortunately none but the slightest, which in no way impeded the operation, were found.

2. *The Difficulty of Differentiating between Abdominal Tumours of Certain Kinds.*—(a) In Case I., one of our ablest diagnosticians looked upon this uniform colloid tumour as a fibro-cyst, and although in my first examination of the case, I had diagnosed a tumour of a uniformly semi-solid consistency, I was forced to share his opinion upon a second examination, evidently under other conditions, with a full bladder, and at this time the diagnosis of a fibro-cyst was undoubtedly justifiable by the fluctuation—distinct fluctuation—in the region of the navel, extending a short distance downward. This fluctuation, as was shown in the course of the operation, was caused by the urine in an unusually expanded bladder, superimposed upon the colloid tumour, in a most unusual location, without the ordinary appearance of a full bladder, which shows the pear-shaped tumour directly above the symphysis. I believe it almost impossible to have avoided this error.

(b) In Case II., I deem my own diagnosis of a uterine fibro-cyst not only justifiable but absolutely necessary on account of the firm connection, by mechanical impaction, of the uterus and the round fibroid mass behind it; the tumour was immovable, the tumour and the uterus were immovably connected; moreover, the uterus was very much elongated and its cavity tortuous, as it would be in a case of intra-mural fibroids. The profuse hemorrhages, the action of ergot in causing a cessation of the metrorrhagia, and a reduction in the size of the tumour, all clearly indicated the existence of a uterine growth. The only point indicating an ovarian tumour was the early cessation of the menses without menstrual molimina and the first appearance of the tumour in the right side. But little reliance, however, can be placed upon the last point, as it is simply a matter of record on the part of the patient.

3. *The Difficulty of Recognizing Elongation and Expansion of the Bladder.*—Peculiar as it may appear, this condition is one not readily recognized. Certain it is that the first intimation we usually have of the

existence of an elongated and expanded bladder, is given by the entrance of the knife into the cavity. We do not look for it, and hence insert the catheter in a routine manner in withdrawing the urine before the operation. In every single instance should the bladder be carefully explored when this opportunity is given for using the catheter and a long male instrument—rubber,—French or English—should be used; but unfortunately, even a careful exploration may fail to detect this condition, and deplorable results follow with almost infallible certainty.

It is not in every case that we can detect this dangerous condition of affairs.

(a) The catheter or sound cannot always be passed to the fundus.

(b) There is frequently no disturbance whatsoever in the urinary secretion, either in quantity, quality, or time, and no distress of any kind.

Theoretically it may appear a very simple matter to determine this condition, but when we see how often the experienced operator cuts down into and through the thus distended bladder, this difficulty will become apparent. Dr. Thomas has cut into the bladder, so also Dr. Homans, of Boston, and others. The distension is fan-like; the walls are so thin that the catheter appears distinctly through them; the bladder is partially adherent; the resisting mass of the tumour presses it firmly against the anterior pelvic wall, hence the catheter does not pass, and this adhesion, most difficult of all adhesions to be recognized, is the most important of all to the operator. None other would I dread so much; no other condition so dangerous as a bisected bladder, hence we should scrupulously endeavour to avoid it.

OPERATIVE HINTS. 1. *A regard for the safety of an enlarged bladder* should make the operator extremely cautious in the completion of the abdominal incision, especially as we have seen that it is often impossible to recognize this condition beforehand, and as the appearance presented by the organ in this state is so deceptive that the most experienced operators have failed to recognize it, and have readily cut into the bladder, usually with fatal result.

In my case, the bladder being drawn up so high by its union with the omentum, and being spread over the tumour and compressed between it and the anterior abdominal wall, was very thin, and of a purplish hue, not to be distinguished from the thickened and inflamed omentum; the sub-peritoneal areolar tissue is closely adherent on both surfaces, not loosely as is usual, but still partially retains its normal appearance, thus serving to indicate, partially at least, the depth reached; as it forms one layer with the peritoneum we cut through both, believing, as would be the case under ordinary circumstances, that only one layer is severed, and now the peritoneum must come to view; but instead of the thin, pale, whitish-blue membrane, which is looked for, a thick, purplish tissue is seen; what can

it be? It is not the smooth, glistening surface of an ovarian tumour; it might be the thickened, inflammatory wall of a pus-cavity, and yet it appears more like a membrane to the touch than a cyst-wall; if the peritoneum has been cut, it has been done accidentally. The operator must not cut into this membrane, which is either a distended bladder, a thickened omentum, or a thickened cyst-wall, but he should carefully endeavour to sever this layer with the scalpel-handle from the superimposed abdominal wall, and to reach its border; if he succeed in this the surface of the tumour or intestinal coils will at once come to view. In order to avoid the accident as much as possible, I always enter the peritoneum at the upper angle of the incision.

2. *It is a matter of the utmost importance to secure deep and firm union in the line of the abdominal incision*, in order to avoid the occurrence of ventral hernia in the convalescent.

The ordinary precautions should, of course, be observed that the edges of the wound be well adapted, etc.; but I am, moreover, especially careful to use the *heaviest* silver wire obtainable; to include peritoneum and recti, one-half inch of the peritoneum and three-fourths to one inch of integument; to achieve close and firm adaptation of the peritoneal surface, as a perfect union of the external portion can be easily secured by superficial sutures. An unfortunate mistake is often made in endeavouring to obtain a neat adaptation of the parts by the first, deep sutures; and this is usually secured at the expense of the peritoneum and recti; the sutures, in order to allow the surfaces of the cuts to come nicely together, must be drawn tight externally, but remain rather loose in the depth; whilst if they are drawn firmly, as they should be, so that the peritoneal and muscular surfaces are well adapted, the incision usually gapes superficially. As soon as the first wires are removed, straps of adhesive plaster and a home-made, but well-fitting, bandage should be applied to remove any strain from the abdominal walls; the bowels should be kept in good condition, and a strong, well-made bandage or abdominal supporter should be worn for the first month, as soon as the patient begins to move about.

My attention has been called to this point mainly by the large ventral hernia in a patient of mine in a neighbouring city, who was operated on, at my request, during my sickness, by an esteemed colleague, who was, however, unable to personally superintend the after-treatment, and by reason of the absence of a proper support a ventral hernia developed, extending the entire length of the incision; and not until I had secured a proper supporter, with an enormous plate, was the sufferer enabled to attend to her household duties. A second case of the kind occurred in my own practice as the result of an exploratory incision of the abdomen, in a case of attempted removal of the uterus. Patient recovered so rapidly that the proper precautions were neglected; the stitches were removed too soon,

she sat up early, and travelled to her home three weeks after the operation; all without the necessary support, so that the recti parted, and the integument alone was left to cover the protruding intestines.

In cases in which the proper precaution was observed, the abdominal walls are as strong as before the operation—I may say stronger—and no exertion is too great for them.

3. *Hemorrhage should be stopped by the ligature, and the finest braided silk which will serve the purpose should be used.*—Torsion, pressure, and cauterization, chemical or actual, are unreliable; harmless upon a surface, but dangerous in a cavity once closed; moreover the tissues are injured and irritated thereby. I ligate every doubtful point; it is certain, saves time, and is less harmful than any other method. The very finest braided silk will answer almost every purpose, and somewhat heavier threads will answer for the largest vessels; if cut short and dropped, the quantity used is so trifling that it can be entirely disregarded. It is safer than catgut, equally harmless, and much more easily handled. Case I., who carried at least thirty ligatures of silk, four of them very heavy, made an unusually rapid recovery with scarcely any elevation of pulse or temperature. An excellent article can be obtained, but each strand should be tested before using, as time and atmospheric influences often effect serious, yet invisible, changes.

4. *Listerism, as routine treatment, is not only to be avoided, but to be dreaded by the ovariectomist.*¹—Although Case II. was one most unfavourable for ovariectomy, a suppurating fibro-cyst with pyæmic symptoms, I

¹ Since the reading of this paper, the November number of the *American Practitioner* has come to hand, and with it a paper on Ovariectomy, embodying the latest views of that most successful operator, Thomas Keith, which has afforded me the very greatest pleasure and satisfaction, as his method, finished to the highest degree by successful experience, differs in but few of its details from the course I have adopted in the face of our authorities. Not only have his patients, but also Keith himself has been poisoned by the use of carbolic acid, and since Dec. 1880, he has not used antiseptics, "in the proper sense of the word," as he phrases it, in his ovariectomies, and operates with better success than ever, absolving himself from the sway of that dangerous phantom, that antiseptic mist, which now enshrouds all surgery, and bids fair to rule for some time to come, until its advantages and disadvantages are clearly understood. Many valuable truths are collected in that one short paper, and many facts clearly stated, which writers are accustomed to veil in mystery, or simply to conceal beneath false statements, in order to hide their own ignorance. He properly extols the value of the reflector as an "enormous assistance" in making a careful survey of the abdominal cavity, and as enabling us more readily to see the bleeding point, but seems to think that he alone uses that important instrument.

I invariably resort to it before closing the incision as a safeguard, lest some bleeding point should escape me, and I well recall my first ovariectomy upon a dark stormy day, when we should have been absolutely lost without mirror or reflector—and I will add that an ordinary hand-mirror answers that purpose very well, when a reflector does not happen to be at hand.

I myself, in common with other physicians of this city, have been in the habit of using the laryngeal reflector for a variety of other purposes. In the cavities I have found it extremely useful.

have never ceased to reproach myself for the use and abuse of carbolic acid during the operation; this was during the early days of Listerism, and I endeavoured to follow the prescribed plan as closely as possible: the sponges, previously steeped in carbolized water, were cleansed during the operation in carbolized water; carbolized water was used for hands and instruments; the spray was directed immediately upon the incision and upon my hands so as to numb them; instruments were kept in carbolized water, ligatures and silk were carbolized. The following collapse and rapid passing away of the patient, already, indeed, pyæmic, has always, in my mind, savoured of carbolic acid poisoning.

I have pursued a different plan since, a modified Listerism, of which Case I. is a fair example, and I am glad to see that Mr. Lister himself has given a death-blow to this carbolic-spray treatment; it will be retained in some few cases, where it indeed serves an excellent purpose, but it must be abandoned as a routine treatment, and, above all, in ovariectomy. Mr. Lister, in commenting upon a case of death from carbolic-spray poisoning, lately reported to the Clinical Society of London, by Mr. Gould, said that "Carbolic acid is too powerful an agent to be safely applied to delicate subjects."

I rely upon absolute cleanliness of patient, operator, and assistants, of room and bedding, sponges, and instruments. My sponges are steeped, for twenty-four or forty-eight hours previous to the operation, in a carbolized, or other disinfectant, solution, and two sprays are directed over bed and operating-table for one-half or one hour previous to the operation; and during the operation itself, from some distance and height, over the operators, but not so as to admit of the carbolic acid being felt in any way. The silk is not carbolized, and the sponges are cleansed in *pure* water—*clear, pure*, but hot water—the sponges must be warm. I also avoid the use of too much carbolic acid in the dressing, and endeavour to protect the integument so as to prevent the possibility of any absorption. I believe that the daily warm bath for a week or more previous to the operation is also an important detail, not only to cleanse the surface, but more particularly to increase the activity of the surface.

Cleanliness is all-important, and carbolic acid, although in a certain measure harmless and even beneficial, is dangerous, as the numerous cases of carbolic-acid poisoning gradually accumulated testify; and dangerous in particular to so delicate and sensitive a membrane as the peritoneum; hence let us be more careful in its use, and, above all, do not attempt to perform ovariectomy strictly under the spray with full antiseptic precautions, in the now accepted sense of the expression.

5, and last, but most important of all, I would advise surgeons in this Mississippi Valley to *operate early*—to give up the *old* and *fatal* rule of *operating only when life is endangered*. Ovariectomy is looked upon as a desperate and almost necessarily fatal resort in this very valley in which

McDowell first originated the operation—experience has truly proven it a dangerous operation here—and why? merely because surgeons have acted on the antiquated rule of not operating until life is endangered; then it is too late; the powers are failing; the tumour is encroaching upon vital organs; is infecting the system; the patient no longer has the needed power of resistance; she sees death imminent and *now demands* the operation of the surgeon, and now it is almost necessarily fatal.

The laity look upon ovariectomy as an operation so dangerous that it is to be avoided as long as possible, and in this they are encouraged by the mass of physicians—the few who risk an operation when life is endangered die as a rule—hence, women prefer to carry their tumours to the grave, to die by reason of their increasing size, and no opportunity is given the patient or the surgeon; he operates in rare instances, and then under the greatest disadvantages.

If suffering women but understood how greatly their chances were increased by an early operation, and if physicians would urge this upon them, we would have comparatively few fatal cases, and women would hasten to the surgeon as soon as an abdominal enlargement is discovered, and they would look forward to the operation as a means of relief and prolongation of life, and not as a means of hastening death, ovariectomy would at once come to be an operation accepted and acknowledged by the profession and the people; and the fatal cases would be those—as in all other tumours—in which the patient has waited too long.

I am informed of a number of patients who are now under observation of their physicians in this State and in Illinois, who are waiting for the growth of the tumour, waiting for symptoms threatening life before undergoing the operation—so thoroughly has this rule of not operating until life is endangered been taught that I cannot urge them to seek relief at a reasonable time—did they but realize the precious moments they are losing!

The most important of all the teachings in my experience is to operate early, if you operate at all.

Before closing I will again briefly recall the points I have endeavoured to urge:—

1. Enter the peritoneum at the upper angle of the abdominal incision, mindful of the safety of an enlarged bladder.

2. Endeavour to secure deep and firm union of the abdominal incision by carefully and closely placed sutures during the operation, and proper support for months after.

3. Ligate all bleeding points, use the finest braided silk, cut short, and drop at once.

4. Avoid routine Listerism, and especially the carbolic acid spray over the hands of the operator and into the abdominal cavity. Cleanliness, not carbolic acid, is necessary. Keep sponges clean and warm, but *not* ear-

bolized; avoid carbolic acid about the peritoneum and open surfaces. Ligatures, sutures, and instruments should be clean, but not carbolized.

5. Late operations are the scourge of surgeon and patient in this valley. If an operation is indicated, operate early, as the patient's chances decrease with the growth of the tumour and the failing of health.

ARTICLE III.

ON THE ABORTIVE TREATMENT OF BUBOES AND LYMPHADENITIS GENERALLY, BY INJECTIONS OF CARBOLIC ACID. By MORSE K. TAYLOR, M.D., Captain and Assistant Surgeon U. S. Army; late Surgeon and Brevet Lieutenant-Colonel U. S. Volunteers.

By the term "abortive treatment" I mean the immediate and complete arrest of inflammatory processes set up in the lymphatic glands from whatever cause, the prompt and permanent relief from pain, and the prevention of the formation of pus, and consequent abscesses.

The pathology and treatment of these glandular inflammations has of late received much attention in various directions. In the late International Medical Congress the subject was discussed at considerable length by Sir Wm. Gull and others; while MM. Bouchut and Le Pileur, of France, have recently contributed valuable articles to the literature of this branch of surgery. In none of these discussions, however, is the immediate and perfect arrest of the inflammation set up in these glands once referred to. In the English discussions, the views expressed were to the effect that these glands are not prone to take on inflammatory action, except as the result of the absorption of septic matters from neighbouring morbid conditions, and that the proper treatment is to open the glands early; and, in case the deposits are of a caseous character, to enucleate or extirpate them. Bouchut recommends measures favouring the early breaking down of the structures, and to this end he has injected vegetable peptones obtained from the *Carica Papaya*, so as to digest the effused products, thereby producing an early abscess. This treatment is effective, it would seem, but very painful. Le Pileur advocates the early aspiration of the abscess, and in case it is of venereal origin, the injection of nitrate of silver; while in the non-specific forms, he recommends the injection of solutions of boracic acid, or chloride of zinc. He states that the average duration of this treatment in nineteen cases was twenty-four days, which he deems successful and an improvement. Some have advocated the use of refrigeration, others pressure, and again others, and perhaps a majority, counter-irritation by iodine and blistering. None of these, however, afford any certainty in respect to arresting the morbid action, allaying the pain,

or preventing the formation of pus, and the destruction of surrounding parts.

For nearly seven years I have pursued a different course in the treatment of this class of affections, and limited my practice to simply injecting the glands with solutions of carbolic acid. In this time I have treated nearly 150 cases of various forms of lymphadenitis, arising from specific and non-specific causes; and, where I have seen them before the formation of pus was well established, I have not failed to arrest the process immediately, and allay the pain in a few minutes. To indicate more fully the success attending this mode of treatment, notes of a few of my cases are herewith submitted. They are condensed as much as possible to save time and space.

CASE I.—While I was stationed at Austin, Texas, Mr. K., an English gentleman, aged about 30, and of excellent physique, called on me May 2, 1875, on account of a painful bubo in the right groin. He was desirous of going to Mexico, and was much distressed at the prospect of being delayed by the impending abscess; besides, having been exceedingly annoyed for two or three nights with the pain, and this, to the extent of allowing him no rest. The swelling and soreness were such that he could not stand erect or walk without great suffering. He gave, as an explanation of the cause, that he had been riding several days very hard on horseback looking up lands, and that about a week before he was out in a rain-storm nearly all day, at the close of which he reached that city. During the day he had felt some slight pain in that region, but paid no attention to it until the next morning, when he noticed a kernel there, which was quite tender to the touch, and annoyed him when he walked; and that, from that time to the present, it had been steadily enlarging and growing more painful. He stated further that, being a stranger, he had been advised to employ a certain physician, which, subsequently, he found to his disgust, to be a homœopathist. An examination revealed no venereal disorder, and he denied ever having had anything of that character. He was very anxious to proceed on his business, but more so to be relieved of the pain that he might get some sleep.

The tumour was about two and one-half inches in length, of an ovoid shape, rather superficial, and situated on the inner aspect of the thigh just outside the femoral vessels, and perhaps two inches below Poupart's ligament. It was in the same region in which we so frequently find similar forms of lymphadenitis in cavalrymen after exposure and hard riding.

It was very painful to the touch, the skin was of a rose tint over a large part of the tumour, and from the general appearance it was on the verge of suppuration. I was inclined to poultice it, but he objected to that, and wanted something more prompt for the relief of the pain. Morphine hypodermically suggested itself, but recalling the remarks of Surgeon J. H. Bill, of the army, on the local anæsthetic action of carbolic acid, and the further fact, that, in those cases where I had aspirated buboes, and thoroughly washed them out with carbolic solutions, the pain and soreness had been promptly relieved, I determined to give it a trial in this instance. Accordingly I prepared a solution of four grains to the ounce of distilled water, and after chilling the surface with ether spray, so as to diminish the sensitiveness, I seized the tumour firmly, and injected into the centre

of the gland twenty minims of the solution. Feeling somewhat uncertain as to the result, I concluded to remain at his bedside and watch events. The operation gave very little pain. In about fifteen minutes he changed his position, when he remarked with some surprise, "I'm blarsted if I don't think that thing feels better." "It don't hurt me at all now to move my leg."

From this time there was no more pain or soreness worth mentioning. Not expecting to arrest the formation of an abscess, I called the next day under the impression that he would be again complaining, but to my gratification he stated that it had not troubled him in the least, and that he "could walk without minding it." I injected it again, however, and repeated the operation the second day thereafter, fearing that the inflammatory action might be renewed. But there was none whatever, and from the day following the first injection, he went about his usual business. The only additional treatment he received was a saline laxative. In ten or twelve days the tumour was not discoverable.

CASE II.—Private J. A., Company D, Tenth infantry, was admitted to the Post Hospital, at Austin, July 12, 1875, with chaneroid and a large bubo in each groin, nearly three inches in length, very painful, the skin flushed over both, and so tender as to make him unwilling to submit to the necessary manipulation to determine whether or not the glands had broken down, and abscesses had formed. He was an old soldier, and his constitution was much impaired by his excesses in drinking and venereal indulgences. He was a hard subject at the best. I chilled the surface with the spray, and injected twenty minims of an eight-grain solution of the acid into each. On the introduction of the needle, I found pus was present, and I then aspirated the tumours and injected them the second time. The relief was immediate. The next day I aspirated them again, but obtained only a small quantity of thin pus, when I injected them as before. From this time on the buboes gave him no trouble, but for the chaneroid he would have been returned to duty at the end of the week. He remained in hospital three weeks, at which time there was no trace of the buboes nor evidence of the abscesses.

CASE III.—Musician C. M., Co. D, Tenth infantry, reported at the Post Hospital July 29, 1875, with a bubo following chaneroid of ten days' standing. Injected the bubo on the same day, and returned him to duty August 11th. He was retained in the hospital to enable me to watch the effect of the treatment on the bubo as well as for treatment of the chaneroid. But one injection was required to allay the pain and inflammation of the gland. No suppuration occurred, and the swelling was scarcely noticeable when returned to his company.

CASE IV.—Private Wm. H., general prisoner, reported August 6, 1875, with primary syphilis, and bubo in left groin two inches in length and painful. Injected 20 minims of the carbolic acid (8 gr.—5) solution. Returned to duty on the third day thereafter; the chanere was treated in quarters, as the prisoner could not be safely guarded in hospital.

CASE V.—Private A. P., Co. D, Tenth infantry, reported April 19, 1876, to Post Hospital, San Antonio, Texas, to which station the command had been changed. Bubo following gonorrhœa. Injected the gland and returned him to duty the next day. The gonorrhœal attack was mild, and of which he did not complain. The bubo was the only annoyance.

CASE VI.—Private L. M., Co. D, Tenth infantry, admitted Dec. 23, 1875, with acute catarrh. While convalescing, on Jan. 5, 1876, a syphi-

litic ulcer, of doubtful character, appeared under the foreskin, and on the 7th, a rapidly swelling and highly inflamed bubo was observed in the right groin. Injected 15 minims of a 16-grain solution of the acid. He complained of the smarting from the caustic action of the solution, but it abated in a short time, and with that there was no further trouble with this gland. On the second day thereafter, another gland became inflamed, and was injected with 20 minims of an 8-grain solution, followed by immediate relief. On the 9th a third gland became involved, and was likewise injected on the second day thereafter. This ended the buboes, and he would have been returned to duty at once but for the chancre. As it was, however, he remained on the sick report until Feb. 2d, when there was only a slight trace of the glandular enlargements.

CASE VII.—Private J. McG., Co. D, Tenth infantry, admitted March 5, 1876, with chaneroid and a bubo well advanced and very painful. It was evident that pus was present, and accordingly I aspirated the tumour and withdrew about a drachm of thick pus, when I injected 20 minims of an 8-grain solution of the acid. The relief was immediate and permanent. But for the chaneroid, he would have been returned to duty on the third day; he was retained in hospital until the 21st of the month, when he was discharged entirely well.

CASE VIII.—Sarah M., coloured, aged about 30, married, called on me Nov. 5, 1875, with a large swelling on the left side of the neck beneath the angle of the jaw; had ulcerated gums, and a severe cold. It was evident that the gland was involved as a consequence of the bad condition of the teeth. The swelling was very painful, and, according to the usual progress of such appearances, the inflammation would end in the formation of a large abscess. I injected 20 minims of carbolic solution with immediate relief and arrest of the inflammatory process. Gradual absorption took place, and no signs of the enlarged gland were visible after ten days.

CASE IX.—Private L. M., Co. D, Tenth infantry, was admitted to the Post Hospital at San Antonio, June 10, 1876, with a bubo about two inches in length. Injected the gland and returned him to duty the next day. No further trouble. He had had chaneroid some weeks before, but the disease was entirely cured at this time.

CASE X.—Private A. P., Co. D, Tenth infantry, reported April 19, 1876, with a bubo following balanitis. Bubo highly inflamed and well advanced towards suppuration. Injected 20 minims the next day with complete arrest of the morbid action. This man did not go on the sick report only to the extent of designating him for "light duty" with his company for the two days.

CASE XI.—Private P. R., troop M, Eighth cavalry, reported July 21, 1876, with a large bubo following very hard riding and exposure to a severe storm. There was no venereal disease apparent, and he denied ever having had any. The gland was deep seated, highly inflamed, and very painful. He could scarcely walk or stand erect. An injection of 20 minims of the usual solution was administered, which afforded prompt relief. He was retained in hospital until the 30th, when he was returned to his company entirely well. But for the fear that his riding might retard the cure he would have been sent to his company on the fourth day.

CASE XII.—Wm. S., private, Co. L, Eighth cavalry, admitted Aug. 4, 1876, with bubo following chaneroid. Injected the gland and returned him to duty on Aug. 8th.

CASE XIII.—Reeruit L., for the Ninth cavalry, reported Sept. 27, 1876, with chancreoid followed by a painful bubo. Injected the gland and cauterized the ulcer with nitric acid and returned him to duty Oct. 16th. Relief of the pain in the bubo immediate, with perfect arrest of the inflammatory process.

CASE XIV.—M. W., a recruit for the Tenth cavalry, was admitted Oct. 10, 1876, with chancre, and remained in hospital until Nov. 12th. On the tenth day after his admission, a bubo appeared in the left groin. I injected it within a day or two, when the gland was scarcely more than one inch in diameter, but whether I failed to reach the interior of the gland because of its being deep seated or other cause, I cannot say; notwithstanding the operation, the inflammation continued, and the swelling increased as usual. The pain was benefited somewhat, but not to the extent that I expected. I then waited until the fourth day thereafter, when the gland had more than doubled its diameter, and was of such a size that I could easily grasp it, and I injected it again with complete success.

CASE XV.—Thos. J., recruit for the Tenth cavalry, reported at the sick call with a bubo, following apparently a gleet, on Oct. 12, 1876. I injected the gland on the 16th, and returned him to duty three days thereafter. The gleet was treated with injections of chloral hydrate.

CASE XVI.—Wm. L., recruit for the Tenth cavalry, admitted to the Post Hospital Oct. 30, 1876, with bubo following gonorrhœa. Injected the gland, and returned him to duty Nov. 9th. Retained him solely on account of the gonorrhœa.

These recruits had contracted their diseases in the North, and the full development of which only became apparent while *en route* to their frontier stations. As a rule, owing to the fatigue of travel, and their inability to give themselves any personal attention while shut up in the cars five or six days, and want of sleep, the inflammatory action was disposed to run a very rapid course. The ulcers and gonorrhœal discharges were of the most virulent character, frequently excoriating surrounding parts.

In the foregoing cases I have not reported any where spontaneous openings had taken place, yet I might well do so, as the beneficial effects of the carbolic acid when freely employed in washing out the abscesses, and following this by compression, either by weights of three or four pounds or by tight bandaging, were none the less marked.

For the last two or three years I have taken no notes of this class of cases, for the reason that they could be but repetitions of what I already had. I have, however, distinct recollections of many cases that have come under my care meanwhile, and to which I can only refer in general terms. In my private practice I have had three cases of glandular swellings in the region of the neck—one following measles, and one following *Rötheln*, and the other from no ascertainable cause; in all of which the glands were painful, and the condition such as experience shows generally end in suppuration. They occurred in girls aged between eight and twelve years. In all of these the pain and inflammatory action ceased in a few minutes after the operation, with a gradual resolution of the enlarged structures, ending

at the expiration of twelve or fifteen days in complete removal of all traces of the morbid conditions in so far as external appearances were concerned. From 1876 to 1878 large numbers of troops, in addition to the regular command, were at San Antonio for greater or lesser periods of time, the aggregate amounting not unfrequently to three or four hundred men, embracing artillery, infantry, and cavalry. In that time scarcely a week passed without cases of adenitis in some of its various forms being under treatment; and in not a single instance did the operation fail to arrest the progress of the disease if performed before suppuration had been reached. Again, since I have been at this post, four cases have been admitted for treatment in hospital.

CASE XVII.—The first was admitted Sept. 22, 1881, with chaneroid and a large bubo. The ulcer was treated with iodoform and the gland injected as usual. The gland was not very painful at first, but, with the reddening of the skin over it, which occurred on the fourth day after admission, it became tender; the operation was then performed with prompt relief of the pain, and arrest of the morbid condition. Oct. 8th he was returned to duty entirely cured, with scarcely a trace of the bubo remaining.

CASE XVIII.—The second case possesses more interest. Sergeant L., Regimental Band Tenth infantry, was admitted to the Post Hospital Nov. 16, 1881. His history showed that while absent on the expedition to the Yorktown celebration, in attempting to lift a heavy piece of baggage, he felt a sharp pain in the left inguinal region, and upon examination by the medical officer it was found that he had ruptured himself. The hernia was reduced without trouble, but tenderness remained in the seat of injury up to the time of admission. Meanwhile a truss had been procured, and several attempts made to adjust it, but without success, because of the soreness. An examination on admission revealed the existence of enlarged deep-seated lymphatic glands situated a little above, and outwardly of the hernial opening, but their size was not such as to induce much external prominence. The truss was abandoned, the man directed to remain in bed, saline laxatives prescribed, and the region painted with iodine. Notwithstanding this course the glands continued to enlarge, and their painful character became more pronounced. There was no venereal disease whatever present, and he claimed that he had never had any. On the sixth day after his admission the inflammation had extended so as to involve a congeries of glands, reaching from near the penis outward and upward in the direction of the anterior superior spinous process of the ilium for a distance of fully four and one-half inches. The whole group was more or less painful, but those lowest down most so. Three of the glands were separated from the others so as to be clearly defined by the intervening sulci. At this time I decided to inject three of the most active, and accordingly threw into each fifteen minims of the solution of carbolic acid of the usual strength after refrigerating the skin so as to admit of the proper manipulation. No pain was complained of. The next day I injected the fourth in the same manner. This ended the treatment of the buboes. The following day, that is, Nov. 24th, the pain and tenderness were gone throughout the whole tumour, and, but for the reported hernia, which I wished to examine more fully, he could have been safely returned to duty on the day following; as it was, he remained under observation until Dec. 6th, when he assumed his duties, and, up to the present, has had no further trouble.

It is well known that these glands often become inflamed and painful without, however, going on to suppuration; and that, at times, in the progress of the diseased action it is difficult to say in the earlier stages whether the termination will be in resolution or in the production of an abscess. Because of this, in the minds of some, doubts may arise as to the real value of these operative measures in arresting the morbid tendencies. Touching this part of the subject I present the following case:—

CASE XIX.—In June, 1878, Private M., Co. E, Tenth infantry, reported at the morning sick-call with a chancreoid of a few days' standing, and with a bubo in the left groin. Of the latter he complained chiefly; and, as to the first, he had been treating himself in the hope of avoiding exposure. As the bubo did not seem sufficiently advanced to enable the injection to have the most certain results, I decided to wait until the next day before interfering with it, meanwhile directing the administration of a saline purgative, and the cauterization of the ulcer with nitric acid. At the morning hour he reported as directed. The gland had increased in size quite considerably, and the pain had interfered with his night's rest, as well as with his military duties. After the usual refrigeration I injected thirty minims of the standard solution of carbolic acid. In about fifteen minutes he came into my office and said the pain was all gone, and that he would like to go to his company; his request was granted. In a day or two he was sent out on escort duty and was absent ten days, during which time he had been compelled to ride on the outside of the stage-coach under arms, with no chance to give himself any personal attention. As a result the chancreoid had assumed an aggravated aspect, and another gland situated just below the one injected was now highly inflamed, but had not reached the stage of breaking down into an abscess. The gland I had injected was painless, and reduced to about one-fourth the size when operated on. To satisfy myself that the virulence of the disease was such, that, if allowed to run the usual course, suppuration in the first instance would have been the result, I decided to treat this one in the usual way. I prescribed accordingly saline laxatives, and the internal administration of iodide of potassium, low diet, rest, and later poultices. The gland was deep-seated, and not until the fourth day did it appear to be in a condition favourable for discharging it. I then aspirated it, and drew off nearly a half ounce of thick pus when I refilled the cavity with thirty minims of a solution of twelve grains of carbolic acid to the ounce, and applied a firm compress. The second day I aspirated it again, washed it out thoroughly with the solution, and applied the compress as before. There was a little drainage through the opening made by the needle for three days, but no further operative measures were employed, and on the sixth day thereafter the chancreoid was in a condition to admit of his resuming his company duties.

I have regarded this as in some degree a test case, and I think it is fair to presume that the first bubo would have behaved like the second, had its course not been interfered with; and I entertain no doubt, that had I treated the second as I did the first, the result would have been the same as with that.

Some care is required to insure certainty in reaching the central por-

tion of the gland, and without this the effort may fail of its purpose. To that end, therefore, I have found it better to wait until the gland has attained to some size, and its stroma sufficiently distended to admit of the free permeation of the injection to all parts of its structure. I have injected them when quite small in the earlier stages, but generally, when I have done so, a second operation has been required, the reason being in my judgment that the gland is too dense for the injected fluid to reach all parts; and the further cause, perhaps, that the inelasticity is such as to force out the fluid immediately, thereby preventing its specific action.

It is also better to refrigerate the skin over the tumour, in order to diminish the sensibility and permit the gland to be firmly held so as to determine its size, and to ascertain the depth to which the needle must penetrate to reach its central parts, while an additional benefit is obtained in the relieving of the patient of any sense of apprehension of pain due to the operation. With some patients this is indispensable to success, for not infrequently, by the cringing of the lower abdominal muscles, and the raising of the leg at the same time, the bubo is placed beyond the firm support of the fingers, the needle thereby misdirected, and the fluid but partially thrown into the gland, or, perhaps, merely into the surrounding external tissues. Only failure could be reasonably expected in such cases.

As a rule, the depth to which the needle should be thrust can be determined by indicating approximately on it, two-thirds of the narrowest diameter of the tumour when firmly held between the thumb and fingers. Taking this measure as a guide, it will admit of the needle being introduced a little obliquely to the surface of the capsule, so as to make a valvular opening, thereby preventing reflux action; and this effect may be further assured by a momentary digital pressure following the withdrawal of the needle.

The average time my patients have had to forego their usual vocations, has not exceeded three or four days, but many will go on with their usual employments if assured they can safely do so; an assurance I have not hesitated to give, after ascertaining whether or not a second injection would be required.

The *rationale* of the treatment can be understood if we accept of the views of those who took part in the international medical discussions, which were to the effect, in general terms, that lymphadenitis, in all its forms, is the result of the absorption of septic matters from some neighbouring parts, hence, by destroying these zymotic elements, we remove the offending cause and arrest the morbid processes consequent thereon. But I am not sure that this is all of it; on the other hand, I am satisfied that the local anæsthetic action of carbolic acid is not a less important factor in the treatment. Many other antiseptics, such as iodine, boracic acid, chloride of zinc, corrosive sublimate, etc., all of which are very prompt in their antiseptic action, have been used, yet they have generally

failed to check the inflammatory action, or to allay the pain; on the contrary the latter has been greatly augmented, becoming at times almost unendurable. Allaying pain is a necessary element in the treatment of any form of disease, and in so far as local effects are concerned, we have no agent equalling carbolic acid in this respect.

While not strictly coming under the heading of this article, yet being so nearly akin to it, I am disposed to refer to the necessity of an early aspiration of the buboes where matter has been formed. In this respect my own experience, as before stated, is fully in accord with M. Le Pileur's. In his recommendations, however, of injections of boracic acid and zinc chloride, in ordinary cases, while in those supposed to be due to venereal sepsis, nitrate of silver should be employed, I fail to recognize any advantages over carbolic acid, if we are to judge by results. Quite to the reverse, I aver that not a single case which I have treated in the series of years I have indicated hitherto, has lasted twenty-four days, the average of those reported by him. Bearing on this part of the subject, and at the risk of being criticized for attempting to adduce general principles in practice from a single case, but which is farthest from my purpose, I am constrained to refer briefly to the following case as indicating in some degree the relative merits of the different agents.

CASE XX.—Private A., Co. H, Tenth infantry, was admitted to the Post Hospital at Fort Wayne, May 26, 1881, under the administration of my predecessor, with chancroid and bubo. The latter was treated by applications of ice, with the effect of arresting the inflammation, so that he was returned to duty June 17th. About the middle of September, 1881, he was detailed as cook in hospital, when, soon after, the gland began to swell again. In the belief that there were some morbid matters in his system which had been "prevented from coming out," as he expressed himself, by the abortive treatment with the ice, he said nothing of his condition until spontaneous openings appeared, when he could no longer conceal it. At this time, Sept. 25th, he came under my care. The tumour was now four and a half inches in length, by nearly three in breadth, with openings appearing in three places; one in the middle and one at each extremity, the latter being three inches apart. It looked as though the whole intermediate space would slough very soon. An extensive cavity, two and a half inches deep, and reaching from one extremity to the other, was found on examination to have been formed, with a copious flow of pus issuing therefrom. I directed the steward to syringe it out thoroughly with a solution of 8 grains of carbolic acid to the ounce, and to cover the gland with a thick compress of carbolized oakum. The next day there was little or no change for the better, and the same was true of the appearance on the second and third days. Indeed, it was disposed to be very indolent. On the third day I directed it to be washed out in every part, by a 16-grain solution, and a compress of 4 pounds weight, made of a bag of shot, to be applied, with a pledget of the oakum a half inch in thickness intervening. The whole aspect was changed in twenty-four hours, and from this time a speedy recovery followed, and he was returned to duty on Oct. 10th, or on the fifteenth day. It was certainly an unpromising

case, and one which, if treated with poultices, would have lingered for many weeks, judging by experience. I have frequently, in the thirty years past, employed iodine and nitrate of silver under similar circumstances, but I have never obtained so satisfactory results in the same length of time in a similar case from those agents, as in this instance, with carbolic acid, and it is only one of many which I could cite.

While there can be no question of the importance of early aspiration after pus is formed, considered in the light afforded by antiseptic experiences, it may be remarked that, in the smaller tumours, and in the larger before the stroma is broken down, the operation need not be carried on to the complete exhaustion of all the matter. A removal of a portion, and refilling the gland with the carbolized fluid, will generally suffice. Under such circumstances, there will often be a little drainage through the opening, perhaps for a day or two, of a thin watery pus, after which the activity of the morbid process will cease, and recovery soon follow. If one, therefore, has a pretty large hypodermic needle, both the operations of aspiration and injection may be done without removing the instrument. When the structure of the gland, however, and with that not unfrequently a considerable amount of surrounding tissue, has been destroyed with the formation of a large cavity, only the most thorough washing out with a four or five per cent. solution will avail, and this to be followed by very firm and exact compression. Without some such course the value of aspiration is often greatly impaired, and several subsequent operations may be required. It is well known that pus cavities are the more likely to heal at once, if, after the first discharge, the pyoid tendencies are destroyed, and the walls closely approximated.

These may seem small matters in detail, and scarcely worth mentioning, yet they are often of the highest importance in securing the most favourable results, alike as to the length of time in recovery, the prevention of burrowing sinuses, and subsequent disfiguring adhesions; and further, if we do not attend to them, we may frequently meet with vexatious disappointments when we had good reason to hope for success. The injection of the abscess is not alone sufficient. It must be followed by the most scrupulous attention in compression, and the appliances resorted to for that purpose should be fitted with the utmost exactness and firmness, and yet be comfortable to the patient. It is not always easy to do this, and sometimes the ingenuity of the medical attendant is severely taxed to meet the requirements.

Pursuing this course as to details, I can truthfully say that I have not had to use a lancet to open an abscess in the lymphatic glands arising from whatever cause, or prescribe a poultice to be applied to one, since I adopted this mode of procedure; nor have I had in the time any lingering abscesses, disfiguring adhesions, or unsightly scars to regret.

In so far as the abortive treatment is concerned, I may say further in support of my own experience, that at the meeting of the Texas State

Medical Association, held at San Antonio in 1878, I invited the attention of the members of that body to this subject in some desultory remarks, and that subsequently several of the gentlemen informed me that the treatment had been equally favourably in their experience. How it will answer in those cases, however, where the deposits are of a caseous character, I am not prepared to say, for I have had none of that form to treat in the time indicated. In respect to such, then, I can only say experience must be our guide as to the value of carbolic acid in arresting the morbid action in its earlier stages; as to the later, there can be no reasonable doubt.

A few words in regard to compression. As generally understood, when compresses are advised, it means the employment of bandages as recommended in standard works on surgery. A difficulty in their use, however, arises in the adjustment in such a manner as to secure uniformity in pressure from one dressing to another, and their retention in place; and without this uniformity, any mode of antiseptic treatment of deep-seated abscesses and sinuses may be a failure. For the inguinal and abdominal regions I have obtained far better effects from the employment of a compress made of a bag of shot weighing three or four pounds, and, in its absence, a bag of dry sand, with an intervening layer of carbolized oakum, tow, or absorbent cotton, to take up the discharge.

For the axillary and cervical regions the Irish potato, or other similar substance, trimmed properly to fit the location—which can be easily done—then enveloped in a strip of thin muslin, the ends of which have been divided into three or four parts, and when adjusted these ends carried in the direction in which the pressure is required, and passed through loops of rubber bands of from one-fourth to a half inch in width, such as are used in stationery, and secured in position by tapes, answer the purposes best. The elasticity of the bands keeps up a nearly uniform pressure, which is not materially varied by changes of position or movements of the body, while the readiness with which the direction of the pressure can be altered, as circumstances require, is of great advantage. This mode of dressing is light, elastic, firm in position, easily applied directly to the abscess without interfering seriously with other parts, is constant and effective in any locality, variable in any direction without removal, and comfortable to the patient. In these respects no ordinary mode of bandaging is at all comparable to the elastic. The ease with which the potato, or other esculent root, can be fitted to any surface or cavity, and that only, and the thickness varied according to the degree of pressure required, gives it an advantage over any other substance likely to be at hand. In order to keep the compress from slipping, the muslin envelope should be given a half-turn close to each end of it; this also prevents the strips from becoming loosened by the tearing of the envelope. The object of the antiseptic injections is to correct and arrest the pyogenia; and after this the efforts

should be directed to the coaptation of the walls of the cavity, and to secure immediate union. To this end I believe that any one who will give this mode of applying compresses a fair trial will be satisfied thereafter with none other.

The strength of the solution employed has ranged from 4 grains to 16 grains to the ounce of water. The weaker solutions are best adapted to cases in childhood, but are not prompt enough in allaying pain in the more highly inflamed cases in adults. A solution of 8 or 10 grains to the ounce, and the injection of from 10 to 40 minims of this strength, will ordinarily meet the requirements for abortive results. The stronger solutions are sometimes, for the moment, unnecessarily painful from their caustic action. An 8-grain solution is the most convenient, of which 20 or 30 minims may be injected.

In mammitis, this strength has been used in a single case with prompt arrest of the inflammation and cure of the disease. As I have had but the one case, however, to treat since adopting the antiseptic method, I have not thought it desirable to include it in detail in this report, yet I have no doubt of its efficiency in all cases where the morbid action is circumscribed, and does not involve the whole mammary gland, and I shall not hesitate to employ carbolyzed solutions when occasions indicate their use, with the same confidence as to results, that I now do in other forms of adenitis.

FORT WAYNE, DETROIT, MICHIGAN, Jan. 5, 1882.

ARTICLE IV.

LARGE PLEURITIC EFFUSION IN THE RIGHT SIDE WITHOUT NOTABLE DIMINUTION OF VOCAL RESONANCE AND FREMITUS. DIFFUSED BRONCHOPHONY IN CASES OF PLEURITIC EFFUSION. REMARKS ON THE VALUE OF BACCELLI'S SIGN ("PECTORILOQUIE APHONIQUE") IN DETERMINING THE NATURE OF THE EFFUSED FLUID. By AUSTIN FLINT, M.D., Professor of the Principles and Practice of Medicine and of Clinical Medicine in Bellevue Hospital Medical College, New York.

NOTABLE diminution or suppression of vocal resonance and of vocal fremitus are signs justly relied upon in the diagnosis of pleuritic effusion. They are generally reliable. It is, however, important to take cognizance of the fact that in rare instances they are apparently wanting. This fact was exemplified in the following case:—

A man, 31 years of age, was admitted into Bellevue Hospital January 9, 1882. He had worked very hard in his occupation (butcher) for several weeks, and had been much exposed to the weather. On the 3d inst. he had chilly sensations and acute lancinating pain in the right side. He

had kept the bed from that date to the date of his admission. On his admission, flatness on percussion on the right side extended from the base of the chest up to the level of the nipple, with vesiculo-tympanitic resonance above this level. The respiratory murmur was vesicular above and wanting below this level. The vocal resonance and fremitus were apparently normal over the whole of the right side of the chest.

On the 13th of January, there was flatness on percussion over the whole of the right side of the chest. Over the scapula and in the infra-clavicular region, the respiration was bronchial, and there was marked bronchophony. Over the remainder of this side there was absence of respiratory murmur, *but the vocal resonance and fremitus were somewhat greater than on the left side.* The circumference of the right side measured 1-2 inch more than that of the left side. The apex of the heart was $1\frac{1}{2}$ inch to the left of the left nipple. An exploratory puncture showed the presence of serous liquid within the right pleural cavity.

On the 19th of January, the physical signs remained unchanged, and forty ounces of serum were withdrawn by aspiration. The aspiration was discontinued owing to the distress of the patient and cough, considerable liquid evidently remaining within the chest.

January 31, absorption of the liquid had taken place. The respiratory murmur was heard quite to the base of the chest. The vocal resonance on the right side and the vocal fremitus were greater, as compared with the left side, than prior to the removal of the liquid, but the difference was not marked. Bronchophony at the summit had disappeared, except that in the interscapular space near the ridge of the scapula the voice was slightly bronchophonic. That the latter, in this case, belonged to health, was shown by the absence of any symptoms denoting pulmonary disease. The patient on this date was convalescent.

It is to be remarked that in this case the vocal resonance below the scapula and the infra-clavicular region was not bronchophony conducted from the compressed lung. It had the characters of the normal vocal resonance, as distinguished from those of bronchophony. It was accompanied by a proportionate amount of fremitus. Comparing these signs on the two sides during the continuance of the effusion, and after its removal, there was evidently some diminution caused by the liquid, but not enough diminution to render the signs on the two sides equal.

I do not undertake to explain the preservation of vocal resonance and fremitus, in this case, when the chest was filled with liquid. It is certainly a very rare exception to the rule. I report it as a clinical fact. Something may be due to the patient's voice, which was notably strong, and of low pitch.

Cases of large pleuritic effusion, in which bronchophony is heard with more or less intensity over the whole of the affected side, are not very infrequent. Before such cases have come under observation the intensity and the diffusion of the bronchophony are apt to occasion in the mind of the physician doubt as to the diagnosis, although other physical signs show conclusively the presence of liquid.

Dr. Baccelli, an Italian physician, maintains that by means of the whispered voice the nature of the liquid within the chest may be ascertained. According to his observations, if the liquid be serous, the whispered voice is well transmitted through the liquid, and is pectoriloquous in character. On the other hand, the voice is not well conducted if the liquid be purulent. Geneau de Mussy sustains the correctness of these observations. At the late meeting of the International Medical Congress, Dr. R. Douglas Powell, of London, submitted a series of cases, some of which sustained and others conflicted with the observations of Baccelli. It so happens that in the case of empyema which I last saw, the loud and the whispered voice were conducted over the whole of the affected side of the chest with such intensity that there had been doubt as to the presence of liquid, although the patient had been previously aspirated. The aspiration was repeated and a very large quantity of pus withdrawn. In the case reported in this paper the liquid was serous, and although the vocal resonance and fremitus were but little diminished, there was no diffused conduction of whispering bronchophony or pectoriloquy. It is not of much practical importance to collect clinical facts with reference to the law laid down by Baccelli, inasmuch as the nature of the liquid, in cases of pleurisy, can be ascertained in a minute by an exploratory puncture, and there can be no objection to this procedure for that purpose.

ARTICLE V.

PROGRESS OF OBSTETRICAL SURGERY. ABDOMINAL DELIVERIES IN THE UNITED STATES DURING THE YEAR 1880. FIVE CÆSAREAN AND THREE PORRO-CÆSAREAN OPERATIONS. By ROBERT P. HARRIS, A.M., M.D., of Philadelphia.

THE accompanying record would have been given to the medical profession of our country at an earlier date but for the fact that all the important points in the cases could not be obtained prior to the commencement of the current year. As reports of Cæsaean operations are seldom published promptly, and are rarely complete in all respects, it requires time to obtain them in a condition to be of value in a statistical sense. I stated some time since that we were retrograding in this country in Cæsaean results, as compared with the days when anæsthetics were not in use, but am happy now to find that in the year 1880 there was a decided change for the better, three women and four children having been saved by five classic Cæsaean sections—that is, 60 per cent. of the women and 80 per cent. of the children. During the same year Italy saved 4 Porro cases out of 11; Germany, 2 out of 5; Austria, 3 out of 3; and France, 1 out of 2.

Great changes have been produced in the minds of physicians and the public by the marvellous results attained in ovariectomy by a few operators in Great Britain and America; and this diminished mortality has largely increased the area of abdominal surgery, so that operations are now performed daily which were at one time regarded as unjustifiable, on account of their great fatality. The prejudice that at one time existed against ovariectomy has given place to a feeling of confidence in the results of much more grave operations upon the abdominal and pelvic viscera. Perfection in abdominal operations has by no means been reached, and we may look for increased skill and success from year to year, as new methods of operating become tested by experience, and are made more widely known through the medical journals.

Many improvements have been made in ovariectomy since its introduction by Dr. McDowell, and the operation of to-day in the most careful hands is quite different from what it was twenty years ago, when men were wedded to the use of the clamp, and afraid to employ the hæmostatic measures now regarded as so important within the abdominal cavity. Fortunately, for the benefit of humanity, the possibilities of the operation, under skilful gynecologists in saving life, have been pretty well ascertained, and the mortality is by no means very high, as compared with some other capital operations. The antiseptic management of Lister, the drainage tube, the uterine suture, the cleansing of the abdomen from blood and other fluids, the internal ligation of the pedicle of parts excised, the use of the hæmostatic pincers of Péan, the pocketing of the pedicle, the excision of the pedicle by the actual cautery, and the hæmostatic effect of hot water, have all contributed to secure a higher percentage of recoveries after abdominal operations in the cases of women.

As might have been naturally anticipated, the improvements in abdominal surgery are commencing to show their effect in a diminished mortality after the Cæsarean operation. Antiseptic surgery has been made use of in a few cases under the old method, and has been almost universally employed in Porro's modification. The latter having been of recent introduction (1876) has had all the advantages of the latest improvements in operations upon the abdominal cavity, and those have been generally most successful who have adhered closely to the directions and followed the example of its originator. Like the old operation, promptness in the use of the knife secures the largest proportion of successful results.

The introduction of the Porro modification in Europe has had the effect of changing very materially, and for the better, the results of Cæsarean deliveries in large maternity hospitals, especially those of Vienna and Milan. To save six women in succession with their children, as has been done in the Santa Caterina Hospital of Milan and

Krankenhaus of Vienna, speaks well, not only for the care and skill of the three operators in each hospital, but for the operation as it was originally devised by the Pavian professor. Although the new method has been adopted in the Italian and French lying-in hospitals, it has by no means supplanted the old operation in the country and in private practice in small towns of France and Italy. It is well known both here and in Europe that the results of the Cæsarean operation have been so far less discouraging in small towns and the open country than in large cities, and especially in the hospitals of the latter. This fact has had its influence even in Italy, whence we occasionally receive reports of very successful operations by the classic method performed antiseptically.

The number of assistants required by the Porro method as compared with the old operation must necessarily limit its application in sparsely-settled districts, such as we have an abundance of in the United States; hence the importance of diminishing the risks of the latter by prompt action, and the adoption of some of the improvements which have so greatly reduced the death-rate after the performance of ovariectomy. To diminish the loss by the Cæsarean section, it is highly important to disseminate a knowledge of the improvements which have been made in the method of operating. The first and most important step is to make the operation one of anticipation and choice, rather than of dire necessity and last resort.

Thus far, but comparatively few Cæsarean sections have been made under the carbolic spray. Those that have had the Lister treatment fully carried out, appear to have done better on the average than where it was not employed. The most important improvements in the operation appear to have been the use of the wire suture, and the thorough cleansing of the abdominal cavity by sponge-mops, moistened with carbolized water. The form of uterine suture that has been thus far most successful in the United States is that of virgin silver wire, twisted twice, cut closely, and bent down over the line of the incision. This form of suture was first employed, and with success, in 1852, upon a woman who was still living when last reported. It is likely in time to be supplanted by pure silk, which, it has been discovered, will in time, as an animal substance, entirely disappear by absorption. Horsehair has also this advantage of disappearance, but is objectionable on account of its stretching when wet. The wire makes a very secure stitch; becomes encysted; does not blacken and turn up as in the vagina; and has been found unaltered in appearance at the end of five years. In the selection of silk for sutures, care should be taken to obtain that which has not been mixed with sea-island cotton, which is itself indestructible; or in any manner coloured with dye. We hope no one will again commit the error of employing carbolized cat-gut as a suture within the abdominal cavity, as it will not hold its knot

where kept moist, and will, besides this, stretch. Fine hemp has been used with success in sewing up the uterus in one case, but is alike permanent, with the silver wire.

The drainage tube of Chassaignac has been used also to advantage, but its value is still to be tested in the Cæsarean operation. In the Porro modification, hysterectomy, and in ovariectomy with extensive adhesions, it no doubt enables the operator to remove sanguineous fluids, which might give rise to septic poisoning. As soon as the tube ceases to discharge, it should be removed; which will generally be the case in a few days. Where the abdomen has been well cleansed and the uterus closed by sutures, there is usually but little call for drainage, unless the uterine wound should gape open, in which event the want of it is apt to give rise to septic peritonitis or septicæmia.

Usually there have not been sutures enough in the uterine wound, and where post-partum relaxation has occurred, the parts have gaped between them: from 6 to 10 interrupted sutures should be inserted. Attention having been called to the value of sewing up the uterine wound, we find the method much upon the increase, it having been used fifteen times in the last ten years. Of the last eight cases thus treated, four recovered; but of the preceding seven, only two. The nine deaths can be readily accounted for from the prior condition of the women, with two exceptions. Thus, Case 1, was a dwarf, two days under the care of a midwife, and one under an accoucheur, who performed craniotomy. Case 2, carried a putrid fœtus, and was a month over her time; she was also the subject of a uterine fibroid. No. 3, was a girl of 15, treated in hospital, and subjected to repeated trials with the forceps; was in labour six hours, and died of exhaustion and septicæmia in two days. There was no appearance of peritonitis; the uterus was soft and dark coloured. No. 4, was a dwarf of 3 feet 4 inches, and weighed 65 pounds; was operated upon early, and died in five days of peritonitis. No. 5, had an abscess in the groin, and a bad cough following coxalgia; forceps used; almost died upon the table; was badly nursed and fed, and died of exhaustion in fifteen days. But for her bad health she should have recovered. No. 6, was a dwarf of 4 feet 3 inches, in labour 24 hours; was sutured both in uterus and abdomen with carbolyzed catgut; died on seventh day, of peritonitis and heart-clot; both wounds gaped open from the giving way of the knots. No. 7, was in labour three days; two under a midwife; died in 36 to 40 hours, presumed from hemorrhage; no autopsy. No. 8, was in labour over 30 hours, and died in 33½ hours from septicæmia; one suture only, used. No. 9, was in labour 4 days with no attention; operation under carbolic spray; died of peritonitis; will be more fully reported further on.

Statistics are of very little value viewed simply in a mathematical sense. We must examine and weigh the peculiar facts of each case, and draw

our conclusions from those that have had the proper advantages to favour recovery. To have failed in nine out of fifteen sutured cases appears to be a very bad showing for the method, as this is a greater mortality than the average of all the cases in the United States; but when we examine the records minutely, we are only surprised at the success in some of the six that recovered, as one was in labour three days, and another seven. The other four were, with one exception, operations of election; the exception being one of necessity, as the operator had in error perforated the gravid uterus of a single lady in an ovariotomy.

We have now to present the special, and somewhat encouraging, record of the year 1880. The numbers of the cases are those which belong to the entire record of the United States in chronological order. It is possible that some unreported operation for the year may have been omitted; if there is one such, the writer would be glad to have the record sent to his address.

CÆSAREAN CASE 119, Toledo, Ohio, May 22, 1880; operator, Dr. S. S. Lungen.—Woman, 34, rachitic, operated upon in a previous labour 5 years before (May 8, 1875). In labour only 3 hours; Fallopian tubes ligated; uterine wound sutured with silver wire; woman alive and well in February, 1881, when she was said to menstruate without pain. There are now two rows of silver sutures in her uterus. An abdominal drainage tube was used in this case for three days.

CASE 120.¹—Whitefield, Coos County, New Hampshire, June 16, 1880; operator, Dr. George S. Gove. Woman 34, rachitic, 4 feet high, and 82 pounds in weight; superior strait reniform; conjugate diameter 2 inches; in labour 32 hours; was exhausted, restless, and feverish at the time of the operation; died in 16 hours of nervous shock, and prostration from vomiting. The child was saved. No uterine sutures were used (case not yet published).

CASE 121.²—New Prospect, Choctaw County, Mississippi, June 30, 1880; operator, Dr. A. S. Kirk, of Louisville, Miss. Woman, black; 26; no deformity; in labour with her third child: a day before Dr. G. L. Terrell was called in to replace a midwife in charge; found right arm protruding, and the fœtus impacted in the pelvis; woman at the time of operation exhausted and sinking; labour pains had ceased; operation performed 30 hours after commencement of labour; child found dead; uterine wound not sutured; abdominal wound dressed with dilute carbolic acid. Woman recovered, and was up and at work in her house in a month. On July 16, 1881, she bore another child naturally.

This is the twelfth case in the United States in which the Cæsarean operation has been performed for the delivery of the fœtus in a transverse position. Nine of the twelve operations saved the women, and one, the child, the pelvis being too small for it to be impacted in it fatally. In one case the pelvis was much deformed; woman saved. In 3, the pelvis were small; C. V. from 3 to 3½ inches, all saved. In 8, there was no deformity; 5 women saved; all of the children destroyed by uterine pressure. The time in labour of the 12 varied from 1 to 7 days. But 1 of the 12 had ever been rachitic; 5 were operated upon in the open country; 5 in small towns; and 2 in small inland cities.

¹ Will be reported fully by the operator.

² Am. Journ. Obstetrics, Jan. 1881. Also communicated by Dr. Terrell.

CASE 122.¹—Near Stockwell, Tippecanoe County, Indiana, November 6, 1880; operator, Dr. Moses Baker. Woman, white; 34; wife of a farmer; 150 to 160 pounds in weight; large immovable fibroid in the pelvis, and a second tumour the size of a fetal head attached to the fundus uteri; slight pains for 60 hours, and membranes ruptured 3 days; state of patient good; pulse 80; very hopeful of recovery; phlegmasia dolens appeared in the calf of left leg on the eighth day, and whole extremity swollen by the twelfth day; up and out of bed in 30 days; child lived. Operator's hands, instruments, ligatures, sponges, and cloths all carbolized. *Uterus sutured with four stitches of carbolized silk.*

Case 123.²—Prescott, Arizona, December 7, 1880; operator, Dr. F. K. Ainsworth. Woman, 35; an Indian squaw of 4 feet 10 inches, with conjugate of $1\frac{3}{4}$ and transverse of $2\frac{1}{2}$; had been in labour without attention for 4 days, and was much exhausted; operation under carbolic spray; all instruments carbolized; Lister dressing; placenta under line of incision; hemorrhage profuse; abdomen cleansed of blood; *uterine wound closed with four silver wire stitches.* Peritonitis set in at the end of the third day and caused her death. Child saved.

Rickets is said to be very unusual in Arizona. There have been two Cæsarean operations, and the only ones on record, performed upon Indian women within a year; the second was at Bar Harbor, Maine, in August, 1881, by Dr. George McClellan, of Philadelphia; squaw also died.

It will be noticed that the uterus was sutured in 3 out of the 5 cases, with a saving of 2; that Lister's method was used in 2 cases, and that phlegmasia dolens, which attacked 2 of the 3 American Porro cases, occurred in one case. This has been a very rare complication of the Cæsarean section, here and in Europe; as it is also a rare sequela of ovariectomy and Porro's operation.

The American Porro cases of 1880 have been already reported. The first operation was by Professor Isaac E. Taylor,³ New York, April 8, 1880; pedicle dropped in; phlegmasia dolens of both legs; woman died on 26th day of cardiac thrombosis having wilfully disobeyed orders in sitting up out of bed; child saved. Second operation by Prof. D. Hayes Agnew,⁴ Philadelphia, April 16, 1880. *Müller's modification* employed; woman died of vomiting and exhaustion in 5 days; child a 6 months' foetus; woman in an almost hopeless condition when operated upon. The third operation was by Dr. Elliott Richardson,⁵ Philadelphia, September 22, 1880, *Müller's modification* used; phlegmasia dolens of one leg; woman and son alive at last report.

There were then for the year, as far as has been ascertained, 8 abdominal deliveries in our country, saving 4 women and 6 children. The highest number in any previous year was 6, in 1875, with 2 recoveries. There were also 5 Cæsarean operations with 3 recoveries in 1867.

* ¹ Am. Journ. Obstet., July, 1881.

² Med. Bulletin, Phila., March, 1881. Also communicated by Dr. James S. Kennedy.

³ Am. Journ. Med. Sci., July, 1880.

⁴ Agnew's Surgery, vol. ii.

⁵ Am. Journ. Med. Sci., Jan. 1880.

The full value of the Porro operation has not been as yet determined, either here or in Europe. It is established that it will save a large percentage of cases regarded as "favourable" at the time of operation; and that as a hospital measure it is much less fatal than the old method. This is proved correct, by the record of the maternities of Milan and Vienna, where the contrast with the old operation is much to the credit and advantage of the new. The Santa Caterina of Milan has saved 6 women out of 8, and the Krankenhaus of Vienna 8 out of 11; the last six operations in each, having been successful. All of the fœtuses were removed alive. One more success in Vienna will bring each hospital up to 75 per cent. of women saved.

329 S. TWELFTH STREET, PHILADELPHIA.

January 25, 1892.

ARTICLE VI.

A SECOND INFECTION FROM SYPHILIS—SYPHILITIC RE-INFECTION. By F. R. STURGIS, M.D., Professor of Venereal Diseases in the University of the city of New York (Med. Dept.), Visiting Surgeon to Charity Hospital, B. I., etc etc.

M. P., æt. 35, entered Charity Hospital for the first time in Oct. 1878, with two ulcerations, which the patient stated came on three weeks after coitus. They appeared on Sept. 20, 1878. One was seated on the corona glandis near the frænum, the other on the free edge of the prepuce. Both were half an inch in diameter, and were indurated. He also had a fluctuating bubo in the right groin, which he said came on five days after the appearance of the ulcers. The sores were touched with pure carbolic acid, and subsequently dressed with iodoform, the bubo was opened, and under poulticing and simple dressing rapidly healed. On Nov. 26, 1878, a macular syphilide appeared on the chest and arms, which, in some places, became maculo-papular. Only the post-cervical glands were indurated. The patient was put upon the mixed treatment, and on Dec. 9, he was discharged much improved.

On January 9, 1879, he was re-admitted to the hospital suffering with osteocopic pains in the legs, arms, and head, and with an iritis of the left eye. Adenitis universalis. He had an itching papular eruption, due to phtheiriasis. Atropia was used for the eyes, and a mercurial pill of blue mass and iron was given internally. On Jan. 19, the mercury was discontinued, and on the 21st. the iritis had almost disappeared. The atropine was now discontinued, and he was placed upon the iodide of potassium in increasing doses for a short time, on account of the osteocopic pains which very decidedly improved in one week. He was discharged Feb. 6, 1879, improved.

Re-entered the hospital April 1, 1879, with a miliary papular syphilide of the face and chest. Adenitis universalis still present, the right epitrochlear and post-cervical glands were especially indurated. There were

copper-coloured stains on his shoulders and buttocks (probably due to his old phtheiriasis), and a synechia of the pupil of the left eye. Had no alopecia nor osteocopic pains until April 8, when he was seized with violent pains of the head and body, and a recurrent iritis of the left eye. He was then placed upon an internal treatment of mercury and iodide of potassium.

On May 1, the left eye had recovered, but the right one was now involved in the same trouble. Leeches were applied to the temple, and the mercurial was increased. On June 5, his symptoms having disappeared, he was discharged.

The patient was not seen again for fifteen months, when on Nov. 29, 1880, he re-entered the hospital with two ulcers on the penis, one on the dorsum of the mucous membrane of the prepuce, the other on the right side of the frænum. He declares, that from June, 1879, to Oct. 27, 1880, he had had no sexual intercourse whatever, but between the latter date and Nov. 8, 1880, when the ulcers appeared, he had five. The ulcers appeared three days after the last coitus (Nov. 5, 1880), and presented the following appearance. The one on the dorsum was superficial, red, granulating, and had a thin, scanty secretion; the other, near the frænum, which invaded the glans penis, fossa glandis, and inner lamella of the prepuce, was slightly undermined, and secreted a scanty amount of pus. *Both ulcers were indurated*, the one on the dorsum penis to a marked degree. In the right groin were cicatrices of old suppurating buboes; in the left groin was a brawny glandular swelling extending for $2\frac{1}{2}$ inches along the genito-crural fold. On the trunk (front and back), thighs, and buttocks was a macular eruption of a dark-brown colour. Anterior and posterior cervical and epitrochlear glands were indurated. No iritis, sore throat, or osteocopic pains were present. In the early part of December, auto-inoculation was successfully performed with the matter taken from the ulcer near the frænum. The pustule of inoculation was very small and short-lived. He was placed upon expectant treatment, and on Dec. 21, it is noted that the sores had entirely healed, leaving decided induration behind. In the left groin, at the apex of the glandular swelling, was a spot of softening, $1\frac{1}{2}$ inches in diameter, over which the skin was thin and reddened, not painful on pressure, and without fluctuation. Reports, in addition to other symptoms, hemicrania, with pains extending down the jaws and neck. The fauces were congested, but no mucous patches were present. Placebo.

Dec. 28. For the past few days nocturnal cephalalgia and pains in ribs and sternum have been very marked. The eruption was not so vivid and the induration of the penis was slightly less. Fifteen grains of the iodide of potassium thrice daily and ten-grain Dover's powder once in the twenty-four hours were given until January 11th, when they were stopped as the pains had disappeared.

Jan. 18. The induration of the penis was nearly gone and the inguinal and cervical adenitis much less. The eruption was very nearly gone. There were no mucous patches of the throat or air-passages. No pain in the throat nor aphonia.

Feb. 9. Induration of the penis just perceptible. Adenitis as on January 18th. The nocturnal hemicrania and osteocopic pains have returned, and in addition he complained of a severe pain at the junction of the xiphoid cartilage and the gladiolus sterni, and of precordial pain. Upon examination of the chest a marked systolic souffle was heard at the apex

and base of the heart, and also, but to a less extent, over the carotids. Mercury (blue mass and iron) was given for the first time since his last entrance.

14th. Symptoms unimproved. The protoiodide of mercury, in one single dose of half a grain, and the iodide of potassium, in two doses of thirty grains each, were substituted for the blue mass and iron, with the effect of relieving the pains in a few days, when the mercurial preparation of February 9th was resumed.

22d. The anæmia was less and the cardiac and carotid souffle perceptibly diminished. The induration of the initial lesions was very soft and hardly perceptible. The osteocopic and intercostal pains had disappeared. Mercurial unchanged.

March 8. The pains reappeared on the 6th and continued until the 25th, when they disappeared again. The record states that no traces of his syphilis are left, and this state of things lasted until April 14th, when he was discharged, much improved.

To sum up the points of the case. We find the history of a man, who, apparently free from previous disease, enters the hospital with two initial lesions, followed by a macular syphilide, osteocopic, and muscular pains, and a double iritis. Under treatment, which extended over eight months, his symptoms entirely disappeared and remained absent for fifteen months from the last date of his taking medicine. He then enters the hospital again with a couple of lesions of the genitals, which appeared three days after coitus, no other connections having been indulged in for a period of five months. At the time of his entrance these ulcers were already a month old, and presented the appearance of initial lesions. Auto-inoculation practised with the matter from one of these ulcers produced an apparently positive result, but it should be noted that the resultant pustule was short-lived, and did not have the characteristics of the simple venereal ulcer. It resembled rather the inoculations produced by the secretion of the initial lesion upon syphilitic persons, as instanced by Pick, Reder, Kraus, Henry Lee, and others. This was followed by a macular syphilide, osteocopic pains, and the other symptoms of an early syphilis. In order to allow the full development of the disease, mercurial treatment was not instituted until the symptoms had fairly developed, and these disappeared shortly after it was commenced.

This question of the possibility of a re-infection by syphilis is a very important and interesting one, touching as it does upon the possibility of a cure of the disease, for it is generally believed that, while the patient is under the influence of the first infection, he is not obnoxious to a second. Cases have been reported in which two infections have taken place, but many of them, upon a careful analysis of the symptoms, prove to have been but a further development of the disease, and not a true fresh infection. The general history in such cases is that a fresh initial lesion appeared accompanied or followed by a pustulo-erustaceous eruption. The correct explanation of this supposed initial lesion is that it was an

ulcerating gumma of the genitals, and the pustulo-crustaceous eruption would be a necessary and proper concomitant. In order to prove a second infection it would be necessary to prove that the initial lesion was followed by the early symptoms of syphilis, such as macules or maculopapules, and the immediate appearance of pustules or pustulo-crustaceous eruptions would throw doubt at once upon the accuracy of the diagnosis. In this case nothing was done to interrupt the natural course of the disease, in order to allow any symptoms whatever that might recur to fully develop themselves, and it is noticeable that what did appear belonged to the early and not to the late stages of the disease. It should be remembered that fifteen months had elapsed without any symptoms appearing, during which time, had the first disease still been active, they (the symptoms) would, doubtless, have manifested themselves. I believe, without a question, that this is a case of syphilitic re-infection; a condition of things by no means common, notwithstanding what many syphilographers would induce us to believe.

A very pertinent question in this connection is, whether the second attack is lighter than the first, and to this question it may be said that, as a rule, it is. In this case the second macular eruption was lighter than the first, and the second attack was not accompanied, as was the first, with an iritis. It will be understood, of course, that I do not consider the reported cases of initial lesion followed by late syphilis to be genuine cases of re-infection. As a rule, a second attack of syphilis seldom goes beyond the earlier and milder forms of the disease, the previous attack having conferred a partial though not complete immunity to the patient's receptivity to a fresh infection, analogous to what we find in cases of a second attack of variola and varioloid.

I have published the case, not only with regard to its being a second infection, but also because it presented many features which were unusual. The ulcers of the second attack probably began as chancroids, that is to say, the patient received a twofold infection, or, as the French school, following M. Rollet's nomenclature, persist in calling it, a "mixed chancre," but this successful auto-inoculation, which was practised after the ulcers were a month old, was due, not to chancroidal matter, but to the fact that the skin of syphilitic persons is capable of being irritated into a fictitious pustulation by the secretion of an initial lesion.

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ARTICLE VII.

TRUE ANEURISM OF THE BRACHIAL ARTERY AT ITS UPPER THIRD CURED BY COMPRESSION MAINTAINED FOR TEN HOURS BY MEANS OF A CONICAL PAD, WITH A RÉSUMÉ OF THE LITERATURE OF THE SUBJECT. By L. ENNETT HOLT, A.M., M.D., of New York, late House Surgeon to Bellevue Hospital.

IN consulting the literature of brachial aneurism, arising from other causes than traumatism, one is struck at the outset with the extreme rarity of recorded cases. John Hunter does not mention it at all. Astley Cooper¹ says: "I do not recollect to have seen a case of aneurism from disease of the brachial." Hodgson says:² "those morbid alterations in the coats of arteries which predispose to the formation of aneurism are rarely met with in the brachial or its branches. . . . I have never seen an aneurism of the arm which was not produced by accidental violence." Crisp³ tabulates five hundred and fifty-one cases of aneurism of all varieties, in which there does not appear a single case of spontaneous brachial aneurism. Alluding to it he says it is extremely rare.

Scarpa⁴ reports a case of his own (Case V.) and refers to one by Flajani (Case XIII.). Birkett, who reports Case VII., says he had searched the records and inquired among his professional friends, but was unable to learn of another case. Sir Benjamin Brodie, who saw this with him, had never seen one.

Broca⁵ in his tables mentions twelve aneurisms of the brachial, but they were all of traumatic origin.

Liston⁶ says: "disease of the coats of the arteries of the upper extremity to a great extent is not known, and very few cases of true aneurism below the axilla are mentioned. I have treated but one such case" (Case XI.). Coming down to more recent authorities we find that it is barely alluded to by Holmes, Hamilton, and Bryant.

Eriksen⁷ says: "spontaneous aneurism rarely occurs below the axilla, but may be met with at any part of the upper extremity." He alludes to four published cases, but does not mention any of his own.

Gross⁸ says: "spontaneous aneurism of the brachial is extremely uncommon. I do not believe it has ever been noticed in this country."

Ashhurst does not mention a case. Agnew relates Case IX. as his only experience upon the subject.

The first case related below came under my own observation last sum-

¹ Surgery, p. 78.

² Diseases of the Bloodvessels, Lond., 1847.

³ Aneurysmes et leur Traitement, Paris, 1856.

⁴ Surgery, vol. ii. 140, ed. of 1878.

⁵ System of Surgery, ed. 1872, vol. i. 778.

⁶ Diseases of Arteries, p. 338.

⁷ Sur l'Aneurysme, Paris, 1890.

⁸ Surgery, p. 144, ed. of 1838.

mer. After a very careful search through the literature of the subject, I have been able to get together from all sources thirteen other cases of brachial aneurism which seemed to be of spontaneous origin, *i. e.*, not directly traceable to a wound or injury of the vessel. In some of these cases, slight exciting causes are stated to have been present, but that fact does not seem to me to be sufficient to exclude them from the number. There are very few surgical diseases which the patient does not attribute to some antecedent strain or fall. A shadow of doubt is thrown upon one or two of the cases on account of the brevity of the histories given. It is noteworthy that only three of the thirteen cases, Nos. II., III., and IX., were observed in this country.

CASE I.—Jas. Coreoran, æt. 36, labourer, was admitted to Ward 11, Bellevue Hospital, May 31, 1881, for an aneurism of the right brachial artery which he had discovered only four weeks before. He states that his father died by accident at the age of eighty, and that his mother is still living in good health at eighty-two. He has a sister suffering from a malignant growth of the face, probably cancerous. When a child the patient had an articular osteitis of the right knee, which resulted in an ankylosis of the joint at almost a right angle, and which has necessitated the use of a crutch upon that side up to the present time. No distinct history of syphilis; admits the use of tobacco to excess; drinks “moderately.”

About four weeks ago, after he had been at work shaking some carpets, he felt severe pains in his right wrist, and noticed it was a little swollen. The pains continued; and, under the impression that they were rheumatic, he applied to a druggist, who, strange to say, advised him to consult a physician, which he did. The doctor discovered a pulsating tumour, which he told the patient was a brachial aneurism, and attempted to treat by compression by means of a tourniquet. The pain from this became in a short time so intolerable that the patient was obliged to have it removed. He has had no other attempt at treatment, and the pains have continued with increasing severity up to the present time. The tumour has also grown steadily in size, but quite rapidly during the past week.

On examination there is found, about two and one-half inches below the border of the pectoralis major on the right side, a tumour the size of a hen's egg, pulsating strongly. Its pulsation is forcible, expansile, but is easily controlled by pressure upon the axillary or the subclavian artery. There is a distinct thrill and a loud *bruit* which can be heard in the brachial below, and also in the radial at the wrist. The radial pulse seems to be slightly delayed upon this side. The whole extremity is swollen so that it measures from half an inch to an inch larger than the left, and it is the seat of some venous congestion. The patient now complains more of numbness and tingling in the hand than of pain, but there is very little if any anæsthesia. A careful examination of the heart was made without detecting any organic disease. Dr. Frank H. Hamilton, who was on duty at the time, very kindly turned the case over to me for treatment, advising that I use compression without an anæsthetic. Digital pressure was first thought of, but was given up and the following contrivance resorted to: A piece of splint board was cut about a foot and a half long, and three inches wide at one end tapering to a half inch at the

other. This latter was padded so that it made a hard ball about three-fourths of an inch in diameter. The patient was placed at the edge of the bed, and his arm, stretched out at a right angle with the body, rested upon a table. Seating myself in front of the patient, I rested the broad end of the splint-board against the front of my shoulder, and placed the padded end upon the artery in the axilla. With one hand this was steadied and kept in position. The other hand was kept upon the tumour to make sure that its pulsation was completely controlled. We were thus enabled to make very constant and even pressure with comparative ease.

June 1 at 10.40 A. M. After having used digital pressure at intervals for about half an hour previous, the above was applied with the purpose of controlling entirely the pulsation of the tumour.

11.15 A. M. Patient complains of numbness and anæsthesia in the hand and arm, and of considerable pain.

11.45 A. M. Pain has increased so that Magendie $\text{m} \text{viii}$ are administered hypodermically.

12.50 P. M. It is found that by a little care the pad can be so placed as not to include any of the nerve trunks between it and the bone, and that when this is done he complains of no pain. A very slight deviation from this position is immediately announced by darting pains down the arm, which is a signal for a readjustment of the pad. As a little soreness begins to be felt, the pad is removed entirely and digital pressure used for twenty minutes.

1.50 P. M. There has been no pain of any consequence for the past two hours. The patient is in fact so comfortable that he has been dozing for ten minutes. The hand is warm but the arm and forearm are quite cold, and there is some venous congestion.

3.45 P. M. A radial pulse is detected, even when there is no pulsation in the aneurism. On making pressure higher up in the axilla above the usual point, this is completely arrested. For the last half hour there has been considerable pain in spite of all effort not to press upon the nerve trunks, and Magendie $\text{m} \text{vj}$ is given.

6 P. M. During the day, the assistants, who were the *internes* of the Hospital, relieved each other at intervals of from half an hour to an hour. During the change of hands, occasionally the aneurism would pulsate three or four times before the pad could be adjusted. Sometimes, also, it would slip a little in avoiding nerves, so that there has not been more than fifteen or twenty minutes at a time when there was no pulsation whatever of the tumour. Since 5 P. M., it has been noticed that much less pressure was required to control the pulsation, and also that none took place during a change of hands. The whole limb is now warm and of nearly normal colour.

9 P. M. No pulsation in the sac has occurred since five o'clock. The radial pulse has steadily improved. There has been no numbness since early in the afternoon. The only pain the patient has experienced for the last few hours has been in his back, from his constrained position. No bruit can be detected. Pulsation of the artery immediately above the tumour is very feeble, and even high in the axilla is much less forcible than normal. The tumour is hard and firm. A hard pad was now placed in the axilla and the arm bandaged to the side. The patient was given a light supper and Magendie $\text{m} \text{viii}$, and in a short time he fell asleep.

4th. There has been no further pain, and no return of pulsation; the

patient has been kept quiet in bed. The axillary pad is now removed; the tumour is found much smaller and very firm.

20th. There has been no sign of relapse. A careful examination establishes this fact, which before has been doubtful, viz., pulsation in the brachial below the aneurism and throughout its course. This is very feeble. The principal means by which the circulation of the arm is carried is by a vessel which approaches in size the brachial, situated on the outer side of the belly of the biceps. This can be followed down to the elbow, where it is lost. The case has been examined by Drs. Hamilton and McBurney, and several other gentlemen, all of whom agree that the cure is a radical one. The patient is discharged from the Hospital at this date in good general condition, with instructions to use his crutch with the left arm.

Aug. 1. He returned for observation, having had no symptom of relapse since his discharge. The tumour can only be found by careful search.

Jan. 9, 1882. I examined the patient to-day, and was unable to satisfy myself that I could find the tumour at all. The circulation is still carried on chiefly through the large collateral branch above mentioned, the pulsation in the brachial throughout being quite feeble. The radial pulse is about as strong as that upon the opposite side. He complains of the hand often becoming cold. In spite of injunctions, he was found to be using the crutch with the right arm again. He has no pain or other inconvenience than the coldness mentioned.

CASE II. *Aneurism of Left Brachial at its Middle; Ligature of the Brachial at Upper Third; Secondary Hemorrhage; Ligature of the Axillary; Cure.* (Reported by L. D. Waterman, of Indianapolis. *Western Jour. of Medicine*, 1867, p. 584.)—A butcher, aged thirty-two years, seen in May, 1857, with a tumour, size of small hen's egg, at middle of the left brachial artery. It was steadily increasing. The patient had valvular disease and great cardiac hypertrophy. The brachial was tied in its upper third. The aneurism shrunk to a small hard lump without pulsation. The ligature did not come away, and on the sixteenth day, with the thread still hanging, the patient butchered a calf. A few days afterwards he called attention to a rapidly forming tumour just above the ligature. Ligation of the axillary was advised, but refused. Two weeks later the surgeon was called for hemorrhage, the false aneurism having burst. The axillary was then tied in its lower third: the ligature came away properly, and the artery between the ligatures as well as the aneurism was completely obliterated. The patient died six months later of dropsy.

CASE III. *Aneurism of Right Brachial at its Upper Third; Ligature of the Axillary in its Lower Third; Secondary Hemorrhage; Ligatures of the Axillary in its Upper Third; Cure.* (Reported by C. B. Kibler, Corry, Pa. *Buffalo Med. and Surg. Journal*, 1870-71, p. 225.)—Male, aged twenty-nine years. The physician was called August 17, 1870, on account of intense pain in the right arm, forearm, and hand. In the upper third of the brachial artery was a pulsating tumour the size of an orange, which had been noticed six weeks before. It was attributed to swinging on a horizontal bar. August 25, the axillary artery was tied in its lower third. On the eighth day, secondary hemorrhage took place; it was temporarily controlled by pressure upon the subclavian, and finally by ligature of the axillary in its upper third. This ligature came away in five weeks, and the wound was healed. When last seen, a few months after the operation, he had but limited use of the hand and forearm, and no radial pulsation.

CASE IV. *Aneurism at the junction of the Upper with the Middle Third of the Brachial; Instrumental Compression; Cure.* (Reported by M. Demec. *Gazette des Hôpitaux*, 1860, p. 170.)—A vinedresser, aged fifty-two years; no history of contusion or injury of any kind; tumour first noticed three and one-half years before, and had grown steadily since that time. He had suffered

meanwhile from neuralgic pains, numbness, and stiffness of the fingers. He was first seen July 20; the tumour was then of the size of a large walnut. It had expansile pulsation, thrill, bruit, and, in fact, all the marked signs of aneurism. On July 21, compression of the axillary was begun by means of Broca's instrument for compressing the femoral. In fifteen minutes the pulsation ceased, but the patient was suffering greatly. After an hour and a quarter, he declared he would bear it no longer, and loosened the apparatus. He would not allow it to be reapplied for any consideration. Two hours later examination showed that the pulsation had diminished very much in intensity; the pulse was feeble, and the whole arm red, and a little œdematous. The next morning the pulsation was found to have ceased entirely; it returned again in the evening, but was feeble; patient would not allow anything to be applied. On July 23, and daily thereafter, until August 8, the tourniquet of Petit was applied, or at least the attempt was made to apply it. Once he allowed it to remain fifteen minutes, but usually loosened it immediately, on account of pain. At no time during this period was suspension of the pulsation obtained. He left the hospital at this time. He was seen August 24, and reported that there had been no pulsation for eight days, his pain and numbness were all gone, and he considered himself cured. Pulsation was then absent, as was also the bruit, pulsation of the artery below the tumour felt with difficulty, feeble radial pulse. On October 2, there had been no relapse; the radial pulse was a little stronger, but still weak. Still feeble pulsation in the brachial below the tumour, *i. e.*, the tumour had been obliterated, but the artery not completely. The entire compression was estimated at two and one-half hours.

CASE V. *Aneurisms of the Brachial, Radial, and Vascular Tumour of the Thumb, all in the Left Arm; Unsuccessful Compression.* (Reported by W. D. Spanton. *London Med. Times and Gazette*, 1865, p. 517.)—Female, aged twenty-three years, came under observation in Sheffield General Infirmary, November 5, 1863, for a swelling of the left thumb. She had bronchoecle, but reports she had always been in good health. Examination revealed a swelling of the thumb which looked as though it were going to suppurate; also between the heads of the first and second metacarpal bones, an aneurism of the radial the size of a small marble, which had been noticed by a sister three years before. It had never caused pain, and had grown very slowly. On the following day an aneurism of the brachial was discovered three inches above the bend of the elbow, of the existence of which the patient was ignorant. It was the size of a pigeon's egg, pulsated strongly, and had a loud bruit. A systolic murmur was heard at the base of the heart. She was kept quiet, and a tourniquet applied on the upper third of the brachial for a few hours at a time. A little consolidation of the sac seemed at first to take place, but the surgeons having decided against the use of the ligature, she left the infirmary in about the same condition as on admission.

CASE VI. *Aneurism at Upper Third of the Left Brachial; Treatment Palliative; Death from Rupture.* (Reported by Scarpa. *Sur l'Aneurysme*, Paris, 1809.)—T. C., a soldier, perceived, at the beginning of the year 1759, a tumour situated just below the left axilla, for which he knew no cause; no history of traumatism of any sort. Fordyce, who saw the patient, recognized an aneurism, but did not dare to undertake its cure. It steadily increased in size until the patient was brought to St. George's Hospital. The tumour then extended along the course of the brachial artery, and presented marked pulsations. The physicians and surgeons of the hospital were of the opinion that no operation should be undertaken, because the tumour was situated so high up. They contented themselves with palliative measures, *i. e.*, cataplasms and anodynes. At the beginning of December, the aneurism ruptured and the patient died of hemorrhage. On the autopsy, the artery was found corroded and ruptured in the neighbourhood of the axilla. At first sight it appeared that the sac was formed of the arterial coats; but it was not so. The cavity of the artery was only a little dilated where it opened into the aneurismal sac and half a finger's breadth above it was closed.

CASE VII. *Aneurism of the Brachial at the bend of the Elbow; Failure of Compression; Ligature at Middle Third; Cure.* (Reported by Jules Bœckel.

Gazette Hebdom. de Méd. et de Chirurg., 1877, p. 344.)—Mechanic, aged 25 years, entered the hospital at Strasburg November 19, 1876, for a tumour of the right elbow of five weeks' standing. It is reported to have been of "spontaneous" origin but came quite suddenly and with marked pains down the forearm and hand. These obliged him to stop work. A physician treated him two weeks before; a small pulsating tumour in the fold of the elbow was discovered to be the cause. It increased in size until it became as large as a small apple [*pomme d'api*]. Compression by a tourniquet was applied, but the patient became so unmanageable and the pains produced by it so severe it was discontinued. On admission to the hospital, characteristic pulsation, thrill, and bruit were obtained, and the radial pulse was feebler on this side. Compression was not again attempted, but the artery was tied with catgut at the junction of the middle and the lower thirds followed by cessation of the radial pulse. On the third day the radial pulse became again perceptible, and on the following day the stitches having been removed, the patient left the hospital. December 7, tumour was one-half the original size and there had been no return of the pulsation. In January it was observed that both the ulnar and radial recurrent arteries were notably dilated, and could be felt pulsating. The patient was last seen on March 5, he had then been working a month without any relapse. Nothing had been seen of the ligature.

CASE VIII. *Aneurism of the Brachial at the Bend of the Elbow; Partial compression for four months; Cure.* (Reported by Mr. Birkett. *Guy's Hosp. Reports*, 1862, p. 311.)—A young surgeon, aged 29 years, noticed January 23, 1862, an aneurism at the bend of the left elbow the size of a hazel-nut. It had caused no symptoms, and was only discovered by accident. No blow or injury of any kind was known, and he had never been bled. He had had repeated attacks of rheumatism during the past five years. When first observed by Birkett, Jan. 24, it presented all the diagnostic signs of aneurism. Compression by an elastic armlet extending six inches above and below the tumour was advised, and a pad placed under the upper part so as to make moderate pressure upon the artery. During three weeks before this could be made, the aneurism had doubled in size. After two weeks' trial it was discontinued on account of the swelling of the hand and the great pain produced. Flexion was then used for a few nights, but also caused great pain and swelling. After this until May 7, irregular compression was made chiefly by a pad and bandage sometimes combining flexion. The tumour was then about the size of a walnut, and its walls felt much thicker. The propriety of ligating the artery was now discussed but decided against, and under the advice of Sir Benjamin Brodie, the continuance of the compression was determined upon. A steel tourniquet with two pads was now tried and worn by the patient under his coat, the arm being carried in a sling most of the time. This was worn until July 11, when all pulsation ceased, it having been very feeble for some days before. After four or five days all pressure was left off. On examination September 12, it was found to have diminished in size to a hazel nut. There was no pulsation. Considerable wasting in the muscles of the arm took place.

CASE IX. Reported by Dr. D. Hayes Agnew (*Agnew's Surgery*, i. 605, ed. 1878), who says: "In only a single instance have I witnessed a spontaneous aneurism of the brachial artery. The patient was about 60, and the tumour was situated two inches above the bend of the arm. The artery was tied two inches above the tumour with entire success."

CASE X. *Aneurism of the Brachial at Middle Third; Unsuccessful Compression; Ligature of the Axillary; Subsequent Opening of the Sac and finally Excision of the greater part of it; Cure.* (Reported by Kade. *St. Petersburg Med. Zeitschrift*, 1866, p. 202.)—Boatman, aged 46. Came under observation January 4, 1865, with a tumour commencing three fingers' breadth below the right axilla, and extending to within the same distance of the fold of the elbow. It was of irregular size, and occupied the internal and anterior surfaces of the arm. It measured 19 cm. in length, 17 in width, and the circumference of the arm was 33 cm. against 23 of the opposite side. In one place it was hard, at another elastic and soft, and at another there was fluctuation. It was covered by healthy,

but in places, very thin skin. Expansile pulsation, bruit and thrill all marked; pulse in radial and ulnar arteries scarcely perceptible.

He stated that when he was about 20 or 25 years of age, a heavy board fell on his right arm, and that ever since there had been a small nodular swelling at the middle of his arm. It did not pulsate, and remained unchanged until six months ago, when it began to increase in size and grew steadily until it attained its present dimensions.

Intermittent compression was tried for six days, being employed for two or three hours four or five times a day. It seemed to diminish in size, and the bruit was sensibly weaker, but at the end of another week it was larger than ever; the skin was hot and very thin, and ligation of the axillary was decided upon. This was done January 19, and an ice-bag placed upon the arm after the operation. January 25, an exploratory incision was made in the sac for pus, and about a teaspoonful of blood evacuated. February 4, the sac was opened by a free incision, and the clots turned out; there was now some pus. The greater part of the sac was removed a few days later; the wound filled in by granulations; and by the middle of March was entirely healed. The patient was discharged April 8, complaining only of a little weakness in his arm and hand; the arm then measured only 2 cm. more than the opposite one.

Kade's interpretation of the history in this case is ingenious and quite plausible. He concludes that the immediate consequence of the injury was an extravasation of blood either between the arterial coats or into the sheath of the vessel; that this was gradually changed to a firm fibrous tumour adhering closely to the artery; that the continued pressure and irritation of this upon the vessel together with the disturbances from the original injury done to the artery were the starting point of an *endarteritis deformans chronica*; and that as a result of the atheromatous changes which followed this, the aneurism had developed within the last six months.

CASE XI. *Aneurism at Bend of Elbow; Unsuccessful Compression; Cure by Ligation.* (Reported by Sidney Jones. *Brit. Med. Journ.*, 1872, p. 210.)—A woman, aged 30 years, four months before she was admitted to St. Thomas's Hospital, "violently sprained her left elbow." There was much pain at the time, and only two months later was noticed a pulsating swelling. On admission it was the size of a walnut, and situated at the bifurcation of the brachial. Pressure and flexion were tried for two weeks without success. The brachial was then ligated two inches above the tumour. The ligature came away on the twenty-first day; there was now no pulsation at the wrist or elbow. She left the hospital three weeks later, quite well.

CASE XII. (Reported by Liston. *Liston's Surgery*, p. 181.)—"An old ship carpenter, while at work as usual, felt something snap in his arm, and a pulsating tumour was soon after noticed, and before I was asked to see him by Mr. Cheyne, of Lieth, it had attained during four months the size of a hen's egg, and was evidently made up in part of solid matter. The brachial was tied and everything went on favourably."

CASE XIII. *Aneurism at the Bend of the Elbow; Digital Compression for ten hours; Cure.* (Reported by Viennois. *Gazette Médicale de Lyon*, 1866, p. 492.)—Male, 17, entered l'Hôtel Dieu, July 26, 1866, for a pulsating tumour of one year's standing. He had been devoting himself to exercising with a hammer for two months when he felt a tumour at the bend of the elbow. When he entered the hospital it was the size of a pigeon's egg, situated apparently at the bifurcation of the brachial. He had had from time to time numbness in the fingers, and the arm was weaker than the other. The tumour was sacciform, and situated in front of the artery. It presented forcible pulsation, thrill, and loud bruit. On extending the arm completely all these signs disappeared. Digital compression was begun over the middle of the brachial at eleven o'clock in the morning. After three hours the tumour became hard, and neither pulsation

nor bruit could be detected. In order to insure a cure the pressure was maintained seven hours longer, until nine o'clock in the evening. Patient left the hospital August 8, completely cured. He was heard from September 13: there had been no sign of relapse, the tumour was about one-fourth its original size, and the arm had regained its function.

CASE XIV. *Aneurism at bend of Elbow; Failure of Compression; Ligature applied above and below the Sac; Cure.* (Reported by Flajani, *Collezione d'os Serv, et rifles di Chirurg.*, t. ii. 22.)—A plethoric young man, after making the muscles of his right arm tense in lifting a weight, could not use it at all for several days because of the pain. A lividity of the skin came on the next day; pain and discoloration disappeared in a short time, and he resumed his work. Used his arm freely for six months when he began to feel pain, which, at last, obliged him to stop work on account of its severity. Although he had seen, for some months, a small tumour at the fold of the elbow, he did not think of this as the cause. When he came under observation the tumour was the size of a large walnut, situated about three fingers' breadth above the internal condyle. The usual signs of aneurism were present. After bleeding the patient, as a preparatory measure, compression was begun by means of a bandage extending from the axilla to the condyles of the humerus. It produced considerable engorgement of the arm, though only moderately tight, and not arresting the radial pulse. This was removed on the fourth day, having been applied in all thirty-two hours, and the only change produced in the tumour was a little flattening; the hand and forearm were greatly congested and oedematous. Believing the aneurism would not warrant any further continuance of this treatment, the ligature was applied the next day above and below the sac. On the fifth day afterwards the radial pulse was detected, and suppuration established in the sac. The ligatures came away on the eleventh and twelfth days, and on the forty-first day he left the hospital cured.

Abstracts of the three following cases by Paletta, Pellatan, and Riche, are introduced here, because they have been so often referred to, especially the first two, by other writers upon this subject, as instances of true brachial aneurism. It does not seem to me that they ought to be included under this head.

Paletta's case (*Giornale di Venezia*, Marzo, 1796) was in a nun, a scorbutic subject, who heard one day, in her left arm, "a noise as if she had broken a nerve." Immediately afterward a pulsating tumour appeared a little above the internal condyle. An attempt was made to treat it by compression, but had to be abandoned on account of a fracture of the forearm of the same side, which was received soon after. The aneurism extended to the lower extremity of the arm, and the increased pulsation of this, together with frequent attacks of hemorrhage, are said to have hastened the death of the patient, which appears from the history to have been two or three months from the appearance of the aneurism. No autopsy was made, but the author had no doubt that it was produced by corrosion and rupture of the brachial artery.

Pellatan's case (*Clinique Chirurg.*, t. ii. 4) occurred in a man of fifty-four, who was first seen June 21, 1779. He was in wretched general condition, and had had for about three months a very bad cough, during which he rested mostly with his head upon his right hand. About three weeks before admission to the hospital he had noticed a swelling in the fold of the arm, which had increased in size with all the signs of inflammation, finally rupturing and discharging a large amount of pus. It appeared like an ordinary phlegmon, the skin over it had a gangrenous look; the sinus was still present, but, on careful examination, strong pulsation was detected at the bottom of it. "Everything indicated an effusion of arterial blood," says the author, who then proceeded at once to apply a ligature above and below the tumour. Secondary hemorrhage came on the tenth day, and the patient lost so much blood that he died on the fourteenth. On autopsy the brachial was found ossified at its lower extremity to its bifurcation; along this track a large rent was found, which he thought had been produced by extension of the prolonged flexion.

Richet's (*Bulletin de la Société Anatomique*, 1873, p. 697) case is a more recent one. The patient was a man of sixty-five, who, when seen, had a large tumour extending from a little above the left elbow to the middle of the forearm, and was of eight days' standing. It came suddenly after a blow received upon some barrel-staves which he was carrying in this arm, and with an acute pain. There was then neither expansion nor bruit. But a week later the tumour had become circumscribed and the size of an orange, and gave all the signs of aneurism. Flexion and compression by sand-bags failing to produce any change in the tumour; digital compression was practised for ten consecutive hours. This arrested permanently the pulsation of the tumour. The bruit could be heard for a week and then disappeared completely. The radial and ulnar pulse continued imperceptible. The patient died comatose one month after the compression. Arteries of the brain were found atheromatous, and extensive cerebral softening, but no hemorrhage or embolus discovered. The aneurismal sac was very thin, and in the anterior part of this a portion much thicker was found, which was interpreted to be another smaller aneurism, by the rupture of which the secondary traumatic aneurism had been produced. This was supposed to have existed a much longer time, but unobserved by the patient. A rupture of the artery was found to correspond to the opening into the sac.

The accompanying Table is a summary of the main points in the preceding cases:—

No.	Authority.	Age.	Sex.	Side.	Site.	Supposed cause.	Treatment.	Result.
1	Holt	36	M.	Right	Upper third	Shaking carpets	Instrumental compression for ten hours.	Cure
2	Waterman	32	"	Left	Middle third	None stated	Ligation of brachial; ligation of axillary for secondary hemorrhage.	"
3	Kibler	29	"	Right	Upper third	Swinging on horizontal bar	Ligation of axilla y. lower part; ligation of upper part for hemorrhage.	"
4	Denuce	52	"	"	Junction of upper mid. third	None known	Intermittent instrumental compression.	"
5	Spanton	23	F.	Left	Lower third	"	Compression by tourniquet.	Left hospital unimproved. Death
6	Scarpa	"	M.	"	Upper third	"	Palliative	"
7	Boeckel	25	"	Right	Bend of elbow.	Spontaneous	Failure of compression by a tourniquet; ligation of brachial.	Cure
8	Eirkett,	23	"	Left	" "	None known	Intermittent compression and flexion.	"
9	Agnew	60	"	"	Lower third	"	Ligation of brachial.	"
10	Kade	46	M.	Right	Middle third	Blow 25 yrs before	Failure of compression; ligation of axillary.	"
11	Jones	30	F.	Left	Bend of elbow.	Sprain	Failure of compression and flexion; ligation of brachial.	"
12	Lislon	"an old man"	M.	"	" "	Strain	Ligation of brachial.	"
13	Viennois	17	"	"	" "	Exercise with hammer	Digital compression ten hours	"
14	Flajani	"a young man"	"	"	" "	Strain	Failure of compression; ligation above and below the sac.	"

From the foregoing cases the following conclusions may be drawn regarding:—

1. *Age*.—By the best authorities on the subject of aneurism between thirty and forty years is given as the time of life in which the disease is the

most frequent. Seven of the above cases, eight, if we include Case XIV., which is said to have been in a "young man," occurred under thirty-two years.

2. *Sex.*—The predominance of the male sex is borne out by our statistics, as well as by those of all observers on the subject. Only two of the cases (V. and XI.) occurred in females. In one the sex is not mentioned.

3. *Site of the Disease.*—The aneurism affected the left side five times, the right four times, and in five the side is not mentioned. In six of the cases, nearly one half of the whole number, the tumour was at the bend of the elbow, presumptively at the bifurcation of the artery. In two cases (V. and IX.) it was situated at the lower third. Of the remaining six cases, two (II. and X.) were at the middle third; one (IV.) at the junction of the middle and upper thirds, and three at the upper third (I., III., and VI.).

4. *Exciting Cause.*—In five of the cases it is distinctly stated that no assignable cause was known. In one (VII.) it is stated to have been "spontaneous." In Waterman's case (II.) no reference whatever is made to etiology. It may be thought that it is not quite fair to accept this negative evidence as proof that the aneurism was not from an injury. But the additional evidence afforded by the fact mentioned of coexisting valvular disease of the heart, together with the occurrence of secondary hemorrhage following a ligature placed close above the sac, and the death of the patient six months later from dropsy, make it more than probable that the aneurism depended upon disease of the arterial coats.

In Kibler's case (III.) the history states that it was attributed to exercise upon a horizontal bar. Arterial disease seems pretty clearly demonstrated in this case also, by the occurrence of secondary hemorrhage on the eighth day after ligation of the artery just above the sac.

In Case X., that of Kade, the aneurism is believed to have been due to an injury by a falling board received twenty-five years before symptoms developed. His argument, though very interesting, does not appear to me to furnish sufficient grounds for excluding this case from the category of true aneurisms.

In Cases X., XII., XIII., and XIV., the tumour could be pretty distinctly traced to a strong muscular effort or a blow as an exciting cause. In two instances it is stated in the history that the tumour was first noticed some months after the occurrence of the injury. In the other two cases there is no evidence in the histories that a rupture of the artery had been produced. In my own case, the patient, on being questioned, could remember no other possible exciting cause than the carpet-shaking, but it was some little time after this before the tumour was discovered. Whether the use of the crutch under that arm for thirty years had anything to do with the production of the aneurism, is an interesting question, and one upon

which there was quite a diversity of opinion among those who saw the case. I am myself not quite prepared to admit it as the cause of the arterial degeneration. My reasons for this are twofold: In the first place, the pressure of the crutch came two or three inches above the point at which the tumour developed; secondly, notwithstanding the frequency with which crutches are used at all ages, and in all conditions, and that we see almost daily the effects of pressure upon the nerves in the shape of "crutch paralysis," this, I believe, is the only instance on record, if indeed this be one, in which the use of a crutch has been followed by aneurism.

5. *Treatment*.—Palliative treatment only, was used in one case (Scarpa's), it being decided that it was unfit for operation, and the patient was left to die.

In eight cases the ligature was used, with ultimate success in every instance. In four of these the vessel was tied pretty close to the sac, *i. e.*, within two or three inches. Secondary hemorrhage followed in two instances, II. and III. The Hunterian operation was done twice, in Cases VII. and X., in one of which it was followed by suppuration in the sac, and the excision of the greater portion of it. In Liston's case it is not stated at what point the ligature was applied. In Flajani's case (XIV.) the old operation of cutting down upon the sac and placing a ligature on the vessel above and below was performed.

Compression was tried in nine cases; it was successful in four, and failed in five. Of the unsuccessful cases, four (VII., X., XI., and XIV.) were afterwards cured by the ligature, and one (V.) left the hospital unimproved, the ligature being decided against. In Case VII., the compression was made by a tourniquet, but it had to be removed on account of the intense pain produced. In Case X., intermittent compression, which appears to have been digital, was tried for six days, being kept up for two or three consecutive hours four or five times a day. No lasting improvement seemed to follow, and it was then given up. In Case XI., it is simply stated that compression and flexion were unsuccessfully tried for two weeks. In Case XIV., compression was made by means of a bandage extending from the axilla down to the tumour at the bend of the elbow. So much œdema and congestion were produced that it was removed in thirty-two hours, and no change having taken place in the tumour, the bandage was thrown aside. In Case V. the tourniquet was used for a while and then given up, as no special improvement had taken place.

Of the successful cases of compression, digital alone was used in one case (XIII.). It was kept up ten hours, but consolidation of the tumour took place in three hours, as neither bruit nor pulsation could be detected after that time. In three cases some form of instrumental compression was used. In Case VIII. it was made first by an elastic armlet and a

pad, but this had to be discontinued on account of intense pain and swelling. A steel tourniquet making partial compression was then worn for two months before pulsation ceased. In Case IV. instrumental compression was kept up for an hour and a quarter, when the pain became intolerable, the instrument had to be removed, and the patient would not allow it to be reapplied. For a week afterward a tourniquet was endured for a few minutes each day, and then the patient left the hospital disgusted. Pulsation ceased spontaneously eight days later.

My own patient (Case I.) had had a tourniquet tried before I saw him, but was unable to stand the pain. By means of the conical pad he was kept free from pain the greater part of the ten hours during which compression was kept up. Only twice was morphia required: once early in the day before we had discovered that it was possible to avoid entirely the nerve trunks. Prompt and complete relief was afforded in both instances. The thickening of the integument in the axilla, consequent upon the long use of the crutch, was undoubtedly of a good deal of advantage in enabling the patient to tolerate the pressure for so long a time. Six hours were required for the consolidation of the tumour; in Case XIII. it was accomplished in three hours. The existence of a good radial pulse at end of five hours, through the collateral circulation, seems to be worthy of more than a passing notice. The condition of the radial pulse is only referred to in three cases. In Case IV. the patient was not seen until eight days after pulsation of the tumour had ceased, and then the radial pulse is said to have been feeble. In Case VI. the radial pulse was not noted until the third day after the application of the ligature; and in Case XIII. not until the fifth day.

May this not be explained in my case, by the supposition that the pressure of the crutch upon the artery had already produced a considerable dilatation of the collateral branches?

The cure of the aneurism without the obliteration of the artery was noted in Denuce's case (IV.), as well as in mine.

From the foregoing it will be noticed that those aneurisms, situated at the bend of the elbow or just above it, have been quite easily managed by pressure when persisted in, or by the ligature. The real difficulties in the treatment of these cases meet us in those in which the aneurism is situated in the middle or upper third of the artery. Broca (*op. cit.*, p. 884) says that aneurisms of the upper third of the brachial still call for the ligature of the axillary, and that pressure is not applicable on account of the proximity of the large nerve trunks. Below the insertion of the coraco-brachialis the indications change; here he advises alternating compression by means of two pads, as even here continuous compression at one point is out of the question.

Ashhurst (*Principles and Practice of Surgery*, p. 558) condemns *in toto* the ligature of the axillary for aneurism of the upper third of the

arm. He says these "may be treated by direct compression or by flexion, and if these fail by the old operation or amputation, either of which is preferable to ligature of the axillary."

Of the six cases above narrated, situated above the middle of the arm, the use of the ligature was followed in two (II. and III.) by secondary hemorrhage; in one (Case X.), by suppuration and excision of the sac. Scarpa's case was left to die, being decided unfit for operation. Denuce's case left the hospital because of the great pain to which he was subjected by compression, and nature completed the cure. With this showing, the simple contrivance of the conical pad, which we will not dignify by the name of an apparatus, but which fulfilled so well the indications in the case in which it was used, seems to deserve a further trial in similar cases.

NEW YORK, No. 200 West Fifty-second Street.

ARTICLE VIII.

ON THE PHYSICS OF ANÆSTHETICS. By WM. H. GREENE, M.D.,
of Philadelphia.

MANY of the substances which have, from time to time, been proposed as anæsthetics, have been selected with a recklessness and want of judgment which would be surprising were it not for the fact that anæsthetics, like other drugs, have been used empirically. A sudden death, caused by a new anæsthetic, is followed by a universal condemnation of the agent and prolific theories as to the cause of the accident.

My attention has been called to an article by Dr. Edward Reichert, in the *American Journal of the Medical Sciences* for July, 1881, in which certain simple ethers which have been passing favourites, are condemned, and the accidents to which they have given rise are attributed to arterial depression caused by the chlorine, bromine, or iodine which they contain.

Without in any manner discussing the physiological action of chlorine, bromine, and iodine, it may be interesting to inquire whether disastrous results may not be occasioned by the physical nature of an anæsthetic to the exclusion of all other factors.

All gases or vapours which are capable of replacing a portion of the air entering the lungs, and which exert no poisonous action on the tissues, may be classed as anæsthetics. It is well known that the inert gases, hydrogen, nitrogen, nitrous oxide, etc., are capable of producing complete insensibility, generally ascribed, and very probably for the most part due, to the exclusion of oxygen. It is not at all improbable that at least a part of the effect of all anæsthetics is due to the same cause. Air charged with vapours of ether or chloroform contains a proportion of oxygen which diminishes as that of the vapour increases, and, while the anæsthetic un-

doubtedly enters the blood and may have a direct action either on that fluid or on the nerve centres, the diminution in the supply of oxygen cannot be without influence. It is manifest that gases or vapours which exercise a destructive effect on the tissues, could not enter the list of anæsthetics, from which carbon monoxide, carbon disulphide, hydrocyanic acid, etc., would consequently be excluded. We must remember that while the gas or vapour used as an anæsthetic excludes a portion of oxygen from the lungs, it may also impede the removal of carbon dioxide, so producing a double effect. It is well understood that the excreted carbon dioxide is eliminated by the ordinary process of diffusion, obeying the laws of the diffusion of gases. Any other gas or vapour is eliminated from the system in the same manner.

The volatility of a liquid is necessarily an important question in selecting an anæsthetic, and it is doubtful whether there be a liquid volatile at about the temperature of the body, and whose vapour is not poisonous, which has not been tried as an anæsthetic. The volatility of a liquid of course depends in great measure upon its boiling point, and the closer the approximation of that boiling point to the temperature of the air, the more rapidly will the liquid assume the gaseous state. But the tension of the vapour of a liquid at ordinary temperatures, also has an influence on its spontaneous evaporation, so that liquids, of comparatively high boiling points, such as ethylene chloride (85°), have been used as anæsthetics.

But while the ready volatility of a liquid insures the ability to introduce a sufficient quantity of its vapour into the lungs, that volatility does not indicate the facility with which the system may be relieved of an agent whose further presence is neither necessary nor desirable. The elimination of an anæsthetic is a matter of as vital importance as is its introduction, and this elimination, for the most part effected by the lungs, must be governed by the laws of the diffusion of gases. If the vapour diffuse but slowly into the air, it is obstinately retained by the air lobules, and its presence must, to a certain extent, interfere with the elimination of carbon dioxide, and the necessary absorption of oxygen.

The rate of diffusion of gases is inversely as the square roots of their densities. It is interesting to compare the vapour densities of a few simple compounds and at the same time their reputed values as safe anæsthetics.

	Boiling point.	Vapour densities.
Nitrous oxide	—	1.527
Ether	35.6°	2.565
Methylene chloride	41.0	2.945
Ethylidene chloride	60.0	3.430
Ethylene chloride	85.0	3.430
Ethyl bromide	40.7	3.754
Chloroform	61.0	4.199
Methyl chloride	—	1.736
Ethyl chloride	11.0	2.219

In such a comparison, the attention must necessarily be drawn to the low densities of the substances which are universally recognized as those whose employment is most devoid of danger.

Of the true physiological action of anæsthetics we are in complete ignorance, and the various theories of "coagulation of protoplasm," and "disturbance of equilibrium of motion of protoplasmic molecules," are unworthy of serious consideration. We know only that they exert a momentary action upon the nerve centres, and it has been long since shown that they are eliminated from the system unchanged.¹ That their action is peculiarly exerted upon the nerve centres may be understood from the fact that nervous tissue is capable of absorbing a greater proportion of the volatile anæsthetics than any other animal tissue. Yet the anæsthetic, chloroform particularly, undergoes no chemical change during its sojourn in the organism.

All of the effects of anæsthetics may be accounted for if they simply cut off from the nerve centres the necessary supply of oxygen, and these effects should vary with the nature of the agent which temporarily replaces the oxygen. It is unquestionable that whatever the physiological action of a drug may be, that action will be intensified by the long retention of the agent in the system, as is the case with those anæsthetics having high vapour densities.

Its vapour density would indicate chloroform to be the least safe of the common anæsthetics, that which would be most obstinately retained in the system because the lungs are unable to eliminate it. Ethyl bromide should be scarcely less dangerous; indeed I pointed out this element of danger to one of those prominent in introducing ethyl bromide, but the suggestion, based only on theoretical reasoning, received but little attention.

The fatal cases of poisoning by methylene chloride cannot be cited as due to any particular poisonous action, for I have no hesitation in stating that the cases in which methylene chloride has been used as an anæsthetic, have been extremely rare. Under the name of this compound, mixtures of diverse composition have been sold, and it is not to be expected that the surgeon should verify the identity of the substances recommended to him. The preparation of methylene chloride is quite difficult, and the consequent expense is so great as to remove the compound from the list of practicable anæsthetics. A sample of methylene chloride, imported from a reputable London house, when it was in vogue as an anæsthetic some years ago, I found to contain about ninety-five per cent. of chloroform, and there is no reason to believe that any of the methylene chloride which has been so loudly abused, was any purer than this sample. Recommended as a safe anæsthetic, it was used without the precautions necessary in the administration of chloroform, and the usual consequences of the careless use of chloroform were inevitable.

¹ Lallemand, Perrin et Duroy. Prize Essay, Academie des Sciences, 1860.

Carbon dioxide is a non-poisonous gas, its density is the same as that of nitrous oxide. The introduction, as an anæsthetic, of undiluted carbon dioxide into the lungs, however, interferes with the elimination of the same gas from the blood, and its accumulation is shortly followed by asphyxia. On the contrary, the excretion of carbon dioxide may still progress while the lungs are filled with nitrous oxide, and anæsthesia by the latter agent is accomplished without a symptom indicating danger.

The chlorine, bromine, and iodine ethers of the lower alcoholic radicals, especially those which have been used as anæsthetics, are not "loosely molecular compounds," as supposed by Dr. Squibb. They are exceedingly stable bodies, and are in great part, if not totally, eliminated from the system unchanged. The odour throughout the body of the anæsthetic employed, noted after death in the experiments of Dr. Reichert and others, is of itself evidence that the negative radical is not separated by decomposition in the economy, and it would be difficult to understand why bromine in ethyl bromide should be more toxic than in potassium bromide, a compound of the same nature, unless such effect be attributable to the carbon radical.

As to the ethers higher in the series, those of butyl and amyl, it seems hardly probable that they should be less injurious than the corresponding alcohols, whose poisonous natures have been well established.

While all of these simple ethers may have a depressing influence upon the heart, it may still be open to question whether the depression be due to the chlorine or bromine which they contain, or whether it may not be due to the difficulty with which they are eliminated. They all have high vapour densities, and the greater the proportion of the chlorine or bromine, the higher the density.

That chloroform, whose physical characters would indicate the least security, is repeatedly used without accident, by eminent surgeons, is explained by the manner of administration, and the continually growing death-list shows that its safe administration is an accomplishment not easily acquired.

It may be confidently predicted that methyl chloride and ethyl chloride might be safely used as anæsthetics, but the former is a gas, and would have no advantage over nitrous oxide, while the latter is too volatile to be used in the liquid form, and not sufficiently volatile to be administered as a gas; they would not, therefore, be apt to fill the places of nitrous oxide and ether.

I would not be understood as attributing all of the effects of the agents mentioned to their physical actions, but the foregoing considerations will show that the relations between physical properties and danger are sufficiently well marked to introduce purely physical characters as important factors in all problems on anæsthesia by inhalation.

ARTICLE IX.

ACUTE GLAUCOMA INDUCED BY DUBOISIA. By ALBERT G. HEYL, M.D.,
Ophthalmic Surgeon to the Episcopal Hospital, Philadelphia.

THAT atropia instilled into an eye may excite an attack of acute inflammatory glaucoma is generally accepted by ophthalmologists as an established clinical fact. An inference which may properly be deduced from this is that all drugs belonging to the mydriatics may likewise cause this morbid state to appear. A practical illustration of this as regards duboisia is presented in the following history; the first, so far as I am aware, on record:—

I was asked to see Mrs. M., æt. 55, in consultation with Dr. F. P. Henry, Dec. 28, 1881. Forty hours preceding the consultation she had applied to Dr. Henry with reference to the condition of her left eye, the sight of which had been failing for some time. The vision of this eye was $\frac{1}{10}$. Owing to a difficulty of obtaining a clear view of the fundus a drop of a two-grain solution¹ of duboisia sulphate was instilled in the eye; partial mydriasis was induced, and then it was discovered that a glaucomatous cupping of the disk existed. The tension seemed to be about the same in each eye. The patient was sent to her home, but presented herself early the following morning with an acute inflammatory glaucoma which had developed during the night. Eserine was dropped in the eye, morphia administered, and the condition somewhat relieved; owing, however, to the critical state of the eye, I was asked to see it, and found on my visit the following: R. E. Difficulty in obtaining a view of the fundus, but no abnormal cupping of the disk. L. E. Conjunctiva considerably injected; cornea steamy; vitreous cloudy; no view of the fundus; tension considerably increased. *Diagnosis.* Subacute inflammatory glaucoma. An iridectomy was advised to be made as soon as possible, and was successfully performed the same day, in my presence, by Dr. Henry. About two weeks after the operation, as Dr. Henry informs me, the R. E. became hard and vision diminished, but under the use of eserine and morphia these glaucomatous symptoms subsided. The condition of the patient Jan. 27, 1882, may be learned from the following record, furnished me by Dr. Henry, to whom, also, I am indebted for the privilege of publishing this case: R. E., V. = $\frac{20}{100}$; L. E., V. = $\frac{20}{100}$; with a convex glass, V. = $\frac{20}{100}$ in each. A more careful examination with test lenses would doubtless have brought up the vision still more; but this for the present may be properly postponed. All signs of vascularity about the incision in the sclera have disappeared.

The main point of interest is that, following the instillation of duboisia, acute inflammatory glaucoma was speedily developed in an eye in which a simple glaucoma already existed. Several questions of practical importance demand attention:—

¹ This identical solution was instilled by Dr. Henry into his son's eyes for refraction purposes, only a day or two before using it on the case narrated in the paper, without the slightest ill effect. The lad is myopic. R. E., M. = $\frac{1}{11}$; L. E., M. = $\frac{1}{10}$.

1. The isolated character of the case, the general clinical record of acute glaucoma, the existence of the glaucomatous cup, will doubtless suggest to some minds that there was no causative relation between the duboisia and the acute glaucoma; the case was one of coincidence. According to this view, the eye was in a state favourable to an acute outbreak at any time, and the excitement attending the ophthalmoscopic examination was sufficient cause for its development. This train of reasoning, plausible though it may seem at first, is antagonized by the clinical record of atropia as regards glaucoma. Experience has shown that atropine is badly borne by glaucomatous eyes; that after operations for glaucoma it ought never to be used. This clinical experience strengthens the asserted fact that atropine will induce acute glaucoma, and from it may be properly reasoned that duboisia resembling in action the belladonna alkaloid may likewise excite acute glaucoma, as in the case described. The burden of proof rests with those who deny the causative relation.

2. In view of cases similar to the one referred to in this paper, it is evident that duboisia as well as atropine, and probably other mydriatics, are agents capable of doing damage in the solutions ordinarily employed.

Furthermore, it may be set down as a good rule never to employ any mydriatic in any eye predisposed to what we ordinarily understand as glaucoma. But the practical questions meet us here, can the predisposition or even the prodromes always be diagnosed? Theoretically, in the present imperfect knowledge respecting glaucoma, probably not; our present means of diagnosis in certain stages of glaucoma are altogether too coarse and imperfect. Practically, however, with due care and vigilance it is, I think, possible to avoid in the vast majority of cases putting a mydriatic into an eye on the verge of glaucoma. There are doubtless exceptions to this statement, but they ought not to detract in any degree from the proper employment of mydriatics. I say proper employment, because there seems to me need of a deeper realization of the fact that these remedies are edged tools which, handled carelessly, may do harm. If this be so, it is proper to direct the attention of the profession to a few practical points, which, although not new, acquire fresh power in view of the case narrated in this paper.

1. The use of mydriatics in determining refraction anomalies. In view of these cases of mydriatic glaucoma, ought the use of mydriatics for the purpose named to be abolished or limited? Timid and cautious men will hesitate in answering this question; the reckless will not heed it. It seems to me that the proper answer is the following statement, which embodies the practice which I follow:—

While beyond doubt there are cases of refraction anomalies which can be fitted without the mydriatic, yet it is by no means possible always to decide which demand it and which do not. Accordingly, in cases where there is the slightest doubt, I paralyze the accommodation without wasting

time and the money of patients in fruitless examinations. This is, however, done with proper caution. I do not entrust the mydriatic with my patient, I drop it in myself. Nor do I use the mydriatic to the same extent as some practitioners; it is dropped in the eye and the examination deferred for an hour and a half or two hours to allow the mydriatic to produce full effect. If necessary, this is repeated a second or third time, on succeeding days, when the examination is completed. When the examinations have been carefully made, further use of the mydriatic is generally unnecessary, and if the result be not what is desired, I conclude that the error is dependent upon the incorrect answers of the patient or in some other undiscovered defect—generally the latter. It seems to me a mistake to submit patients of this kind to prolonged use of mydriatics under what is doubtless a false assumption that the ciliary muscle is insufficiently acted upon by the remedy. I do not doubt but certain well-known cases which go from one oculist to another, seeking in vain for relief, while suffering from anomalies of refraction have also other elements in their cases which the light of science thus far has failed to reveal. It is of course unwarrantable in cases of this kind to employ mydriatics beyond what is absolutely necessary.

It is assumed in following out the plan described that there is skill on the part of the examiner; a keen and practised observer will often learn from the mere manner in which the patient answers questions whether the examination is proceeding satisfactorily or not, and he need not require much time to ascertain where the fault lies; whether with the method of examination employed or with the patient. It is altogether beyond the limits of this paper to illustrate or specify the details connected with the subject of refraction anomalies: but the point to which I wish to direct attention is that it is possible to use the mydriatic solution employed in refraction anomalies in a reckless and careless way which may prove damaging both to patient and physician. Should obstinate cases occur, before the prolonged use of mydriatics is resolved upon, let careful examination determine whether the fault lies in the imperfect paralysis of accommodation or in some other element. I do not suppose that in a healthy eye prolonged use of a mydriatic can induce the glaucomatous state, but aside from the difficulty of determining whether an eye be in normal condition or not it certainly is better not to use the drugs beyond what the necessities of the case demand.

One more point in this connection: before employing mydriatics for refraction purposes it is proper to exercise circumspection with regard to the case, *e. g.*, to examine the state of the accommodation. An instance from my case book will illustrate my meaning.

C. T., æt. 49, carpenter, says that three years ago he began to use glasses for his near work, he used them for perhaps a year then obtained the present pair which are +18. These, are, however, insufficient now, and he accordingly applies to me. R. E., V. = $\frac{2}{3}$; with +48 V. = $\frac{2}{3}$; with ophthalmoscope H. = $\frac{1}{3}$. L.

E., V.= $\frac{2}{3}$; with +48 V.= $\frac{2}{3}$; with ophthalmoscope H.= $\frac{1}{3}$; at 12 inches in order to read Jæger 1, he requires +14 for R. E., +12 for L. E., which are given him. There is nothing abnormal in the fundus of either eye. The tension is not recorded. Now here is a case of rapid failure of accommodation in a man aged 49. Suppose for some reason it would have been desirable to paralyze the accommodation. I would prefer not to do it owing to the previous history of the patient, the rapid increase of presbyopia even though there be no cupping of the disk and no increase in tension, being sufficient cause to avoid the mydriatic.

2. The use of mydriatics for ophthalmoscopic purposes. It is probable that almost all the cases of mydriatic glaucoma have been induced in cases when the drug has been used to produce dilatation of the pupil. It is easy to understand why it is so; a patient applies to a physician on account of failing sight: the lens is slightly cloudy or cornea steamy, pupil small, the background, as in the case described in this paper, very imperfectly seen. (The optic disk of sound eye which I examined the day of the operation was seen with great difficulty.) The tension seems to be physiological. Of course any one may fall into the trap. Certain precautions may therefore be mentioned when it is desirable to dilate the pupil. *a.* The examination of the tension and the field of vision. *b.* The use of weak solutions of the mydriatic, the assumption being that the weaker the solution, *cæteris paribus*, the less likely to have ill-effects from its use or at all events the more easily will they be combated by proper remedies. The natural tendency is to use the first solution that comes to hand, be it strong or weak, from lack of thought or ignorance. Every one who uses mydriatics ought to make it a standard rule never to employ a stronger solution than the necessities of the case demand. A $\frac{1}{4}$ gr. solution of atropia or a corresponding solution of any mydriatic may be used as a standard solution for dilatation purposes. *c.* Suppose we find after dilatation of the pupil that the eye is glaucomatous, what is to be done? Evidently one had better not await the signs of the onset of acute glaucoma but begin at once the use of eserine and morphia.

3. Suppose, however, the acute glaucoma be developed, what further is to be done? This brings us to the question of operation. The question is a difficult and delicate one, chiefly from the danger of starting the disease in the other eye. Nevertheless I think the responsibility must be assumed, without shrinking or without delay, by all concerned; we may not temporize by using eserine, pilocarpine, morphia, etc., when the vision has diminished to counting fingers, and the conjunctiva is injected. Every surgeon of experience in this disease understands the dangers of delay at such a time; a day or two of glaucomatous pressure may so damage the delicate retinal elements as to turn what seems at first a brilliant operative success into a total failure. Thus I have seen by operation vision rise from barely counting fingers to $\frac{1}{4}$ $\frac{8}{8}$, but sink again in the course of months from the cause mentioned to bare light perception.

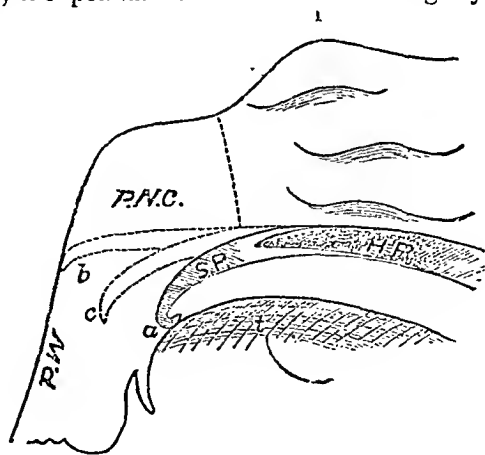
ARTICLE X.

THE SOFT PALATE AND UVULA AND THEIR FUNCTIONS. By WHITFIELD WARD, A.M., M.D., Physician to the Metropolitan Throat Hospital.

THE physiological action of the velum pendulum palati is under the especial control of three groups of muscles, viz., the levators, the depressors, and the tensors. The first group comprise the levator palati muscles, the second the palato-pharyngi and palato-glossi, and the third the tensor-palati. During deglutition, when the morsel of food has passed over the epiglottis, the palato-glossi muscles, the constrictors of the fauces, contract behind the food, the soft palate is slightly raised by the levator-palati, and made tense by the tensor-palati, and the palato-pharyngi contract and come near together, the uvula filling up the slight interval between them. During phonation the movements of the soft palate are both remarkable and instructive. In most of the works devoted to laryngology, although great prominence has been given to the physiology of the larynx, scarcely a line has been devoted to that of the palate and its attached uvula. Why this is so, I am unable to state. But this I am confident of, that the velum and uvula play an important part in the production of nearly every tone that issues from the vocal organs, and without their proper action singing is out of the question. The tone-waves which are created by the vibratory action of the vocal cords pursue three different courses in their journey from the body, viz., through the mouth, through the nose, and through the mouth and nose combined. The direction which each wave takes depends entirely upon its position in the voice-register. In some cases the majority if not all of the positions assumed by the velum can be observed without the help of the tongue-depressor, whilst in others, especially where the tongue is thick or unruly, this instrument is indispensable. During the production of tones that are emitted through the nose alone, the free border of the velum, throughout its entire extent, rests upon the dorsum of the tongue, thus shutting off all communication between the fauces and anterior buccal cavity, and creating, as it were, two distinct compartments. This valve-like action of the soft palate is a very important one; for, by so doing, the length of the human musical pipe is increased. If, during the intonation of certain notes, the pendulous velum should be pressed up against the pharynx, exactly the same effect would be produced as though a piece of the upper extremity of an organ-pipe were to be cut off, namely, the placing of the note higher in the scale. The posterior pillars of the fauces play a most important part in the formation of this, what might be called, "annex" vocal tube; since by the contraction and relaxation of the muscles forming these columns, the diameters of the above-described cavity are made to increase and diminish, in order to

exactly conform to the varying dimensions which the larynx assumes during the production of certain tones.

During the intonation of sounds that pass through the mouth alone, the free border of the velum is pressed tightly against the upper surface of the pharynx, thus cutting off all communication between the mouth and posterior nasal cavities; the human musical instrument is thus materially shortened. In the production of these tones the roof of the mouth, made up of hard and soft palate, acts the part of a complete sounding-board, increasing the timbre of the voice, and greatly adding to its beauty. During the singing of tones that issue in the same degree from both nose and mouth, the velum is poised in the posterior part of the buccal cavity, at an equal distance from the posterior wall of the pharynx and base of the tongue. Let us examine a vocalist during the singing of the scale with the full chest register. At the intonation of the lowest note, the velum rests throughout its whole free edge on the base of the tongue, and there is no communication between the cavity immediately beyond this pendulous body and that in front of it. As the performer ascends in the scale, the velum lifts itself from the tongue, at first forming two semicircular openings on either side of the uvula. When a middle note of the register is arrived at, the valve-like palate is suspended in the mouth at an equal distance from the pharynx and tongue. As soon as the higher tones are reached, the body is approximated to and touches the posterior wall of the pharynx, at first only in three places, viz., at the site of the uvula, and at either extremity, thus forming, as in the case of some of the lower notes, two semicircular openings. When the highest note of the register is sounded, the pendulous velum is drawn tightly up against the pharyngeal wall, and no communication whatsoever is allowed to exist between the buccal and posterior nasal cavities. The subjoined cut will serve to illustrate the three different positions assumed by the soft palate, as described above. *a*, representing its location during the production of tones that issue through the nose alone. *b*, the location of the velum during the production of tones that issue through the mouth alone; and *c*, its location during the production of tones that issue in the same degree from both nose and mouth.



The truth of these assertions can be easily demonstrated by any person possessing slight vocal abilities. All that is necessary to do is to com-

press the anterior nares so as to preclude the possibility of air escaping therefrom, and produce the tones above described. Those that proceed entirely through the mouth will, of course, be unaffected by such pressure, while those emitted through the nose alone will be entirely gone, or greatly muffled.

The physiology of the uvula is none the less remarkable, since very many of the actions of the velum are entirely under the control of this important little body. The uvula is the supporter of the soft palate. In order that the *velum pendulum palati* shall perform its functions in a normal manner, it must be kept from vibrating. If perchance this body should vibrate during intonation, a sort of tremulousness would be imparted to the voice, and the whole beauty of the singing be utterly destroyed, or seriously compromised. In order to examine fully the movements of the uvula, it is necessary to resort to rhinoscopy. Those cases in whom the interval between the soft palate and pharyngeal wall is marked afford the best advantages for examination. Presuming that the uvula is of the normal size, let us examine one of these cases during singing, and tabulate the result. While the free border of the palate is resting on the base of the tongue the uvula lies dormant on the surface of the same organ; but as soon as the velum elevates itself the uvula begins to act, rising up from the tongue, where, in the first instance, it was extended for its full length, in proportion as the velum recedes from the latter body. When the pendulous palate has reached a certain point in its journey upwards the uvula is depressed to its fullest extent, touching the tongue only at its tip end. Generally speaking, the point of suspension above alluded to is midway between the pharynx and the tongue, normally poised. At this time the tongue begins to take an active part in the above movements, for when the tip of the uvula just touches the dorsum of the tongue, this latter organ begins to elevate itself at the base, assuming gradually a more and more convex position as the velum ascends. This action on the part of the lingual organ, is for the purpose of continuing its support to the velum. The degree of convexity, which is reached by the tongue, is regulated by the distance at which the soft palate is placed from the pharyngeal wall. As soon as the tongue ceases to rise, and thereby fails to afford support to the velum, the *azygus uvulae* muscles begin to contract, and the uvula is seen to be speedily drawn upwards. When these muscles begin to contract there appears on the posterior surface of the soft palate a slight prominence, which in its inception is scarcely noticeable. Upon carefully inspecting the posterior nares, with the valuable assistance of the rhinoscope, during the workings of the *azygus uvulae* muscles, it is seen that the prominence just alluded to increases or diminishes in size, according as the uvula is drawn up or relaxed. What then is the function of this which has been aptly termed the *azygous* prominence? It is akin to that of the uvula itself, furnishing support to the soft palate when the

uvula fails to perform this important duty. Were it not for this action, as soon as the apex of the uvula became separated from the base of the tongue the velum would be free to vibrate at will, and the singing voice be seriously affected. Before concluding, I would say one word regarding the amputation of the uvula. In order that the uvula shall perform its function of supporting the velum properly, its dimensions must be normal. It is impossible to set down any standard length by which the surgeon can be guided. The only safe rule which can be employed, is to gently depress the tongue and measure the distance from its base to the quiescent velum. The tip end of the normal uvula will just touch the lingual organ during the above manipulation. What will be the effect of an elongated uvula upon the velum pendulum palati? It will seriously compromise its action. The maximum amount of interference will be manifested during the production of tones that pass entirely through the mouth, and the minimum amount during the rendition of sounds that pass entirely through the nasal passages. In the first instance the voice will be interfered with in two distinct ways: 1st. The complete approximation of the palate to the pharyngeal wall will be prevented on account of the additional weight which the elongated body imposes upon the velum. 2d. The *azygus uvulae* muscles will be unable to draw up the entire uvula, hence there will be a relaxed body of varying size directly in the line of the emitted tone. When the tone passes through the nasal passages only the entire uvula rests on the tongue, and is not apt to offer any obstruction. An elongated uvula must interfere with tones that pass partly through the nose and partly through the mouth, not only by offering an obstruction to the egress, but also by bearing down on the velum, which latter act will suffer more air to be transmitted through the nose than is required. Very many practitioners make a grievous error when performing this operation, in that they excise too great an amount of this important little organ. This is a grand mistake, and one that is almost certain to harm the singing voice. If the uvula is wanting, the velum will lose its support in the rendition of nearly one-half the vocal register, hence the currents of air, as they pass from the body, will set this valvelike body into vibration, which will cause a certain degree of tremulousness to be imparted to the voice. I have seen several instances in which the excision of the entire uvula has been followed by the above phenomena. As soon as the surgeon becomes aware that this conical-shaped body, which is generally considered as useless, has an important function to perform within the human organism, such cases will be extremely rare.

339 WEST TWENTY-THIRD STREET, N. Y. CITY.

ARTICLE XI.

SOME CONSIDERATIONS IN MILITARY SURGERY OF THE FEMUR. (WITH CASE OF EXCISION AT HIP-JOINT.) By JOHN VAN RENSSELAER HOFF, A.M., M.D., Captain and Asst. Surgeon U.S.A.

THERE is a peculiarity about gunshot wounds so characteristic that it marks a wide difference between the practice of surgery in civil and military life. It has been well said that as a science, surgery, wherever practised, is one and indivisible; but as an art, it varies according to the peculiar nature of the injuries with which it has to deal, and with the circumstances in which it falls to be exercised—more particularly is this true of military surgery, which is ever changing as the conditions and appliances of warfare change. The history of the great campaigns of the world (their tactical evolutions, strategical operations, the climate and country in which conducted, the quantity and quality of supplies, and especially the style of armament) is the history of equally varied changes in the surgery of war. The improvement in arms of precision, the wonderful growth of great guns, the terribly increased destructiveness of missiles, large and small, are but few factors among many which are gradually but surely working radical changes in military surgical practice. Paré wrote in the sixteenth century, "Truly when I speak of the machines which the ancients used for assaulting men in combats and encounters, it appears to me as if I spoke of infant's toys in comparison with these, which, to speak literally, surpass in figure and cruelty the things which they thought the most cruel." Macleod,¹ commenting upon this remark, says, "When Paré thought the cannon of his day so enormous and destructive, what can we say of those huge sea-service mortars and immense cannon used to defend and attack Sebastopol?" and yet these very guns are, in their turn, little more than toys in comparison with the monsters of destruction now in use. As there is ever an increase in the destructive power of arms, there should be an equal, if not greater increase in the power of conservation possessed by the military surgeon. Recent experience teaches us that a real advance has been made in this direction, though certainly until our war of the rebellion statistics present anything but an encouraging picture; while the opinions of authorities were nearly unanimous that any attempts at temporization in gunshot wounds of the femur were, as a rule, not good surgery.

Mr. Holmes² says:—

"In field practice . . . excepting, in certain special cases, in fracture above the knee from rifle-balls, amputation is held by most military surgeons to be a necessary measure. The special cases are gunshot fractures of the upper third of the femur, especially if it be doubtful whether the hip-joint is implicated or not, for in them the danger attending amputation itself is so great that the ques-

¹ Notes on Surgery of Crimean War.

² A System of Surgery, II., 2d Edition.

tion is still open whether the safety of the patient is best consulted by excision of the injured portion of the femur, by removal of detached fragments, and trusting to natural efforts of union, or by resorting to amputation."

He further says:¹—

"When a patient with gunshot fracture of the femur comes under a surgeon's charge, however free from complications, and however favourable the case may appear to be, the surgeon knows that the patient will be invariably subjected to a wide variety of hazardous circumstances, if an attempt to conserve the injured limb be determined upon."

Dr. Macleod,² in speaking of shot fractures of extremities, says:—

"It can hardly be doubted that the great striving after conservation, which influenced the surgeons of our army (English), was one main cause of that mortality which attended these injuries. Full of the promise of the schools, we would not admit that any injury apparently so slight could withstand the assiduities of a wise conservatism," but the author was soon forced to conclude "that though union did in rare cases follow compound fractures in the middle and lower third of the thigh, still the ultimate percentage of loss was greatly less when primary amputation had been performed than when limbs were saved, or tried to be preserved, or removed at a late period." . . .

Dupuytren maintains that,³ "in compound fractures from gunshot, in rejecting amputation we lose more lives than we save limbs." This opinion was fully endorsed by the French surgeons, and finally John Bell,⁴ deducing his conclusions from experience and statistics, says of the attempt at conservation:—

"Taking a retrospective view, we see in true perspective all the dangers of a nine months' cure, which is but a weary travel, step by step, betwixt life and death. In this view, we see the dangers of frequent fevers, wasting diarrhœas, foul and gleety sores; some dying suddenly of gangrene, some wasted by profuse discharge and successive suppurations, new incisions, and unexpected discharges of spoiled bone; we see those who recover halting on limbs so deformed and cumbersome that they are rather a burden than a help. In the very moment that we hear of such a cure, we know how much the patient must have suffered, and how poorly he has been cured: and we can, from the long sufferings of those who escape, tell but too truly how many must die."

During the latter part of the Crimean war, under the most favourable circumstances, and in most favourable cases, selected because injury to the bone and soft parts was comparatively slight, only 9 per cent. of compound fractures of femur recovered without amputation, while 34.7 per cent. in apparently less favourable condition, recovered after this operation.

The comparative value of temporization and amputation in the Crimean and in our own war (1861 to 1865), is indicated in the following table:⁵—

¹ Loc. cit. ² Loc. cit. ³ Clinical Lessons. ⁴ Treatise on Gunshot Wounds.

⁵ Shot fractures of thigh occurring during war of 1861 to 1865 (thus far reported and traced to conclusion) are divided as follows:—

	Treated expectantly.			Treated by amputation.		
	No. of cases.	Recovered.	Percentage of mortality.	No. of cases.	Recovered.	Percentage of mortality
Upper third of thigh . . .	330	93	71.81	32	8	75.00
Middle third of thigh . . .	235	106	55.46	93	42	54.83
Lower third of thigh . . .	173	72	57.79	243	131	46.09
Mean percentage of mortality			61.68	.....		55.64

	Treated expectantly. Percentage of mortality.	Treated by amputation. Percentage of mortality.
Crimean war ¹	90.30	65.20
War of rebellion ²	61.68	58.64

Our statistics show an advance of nearly 33 per cent. beyond those of the Crimea, in favor of temporization, and but 3 per cent. in favor of amputation as against the expectant plan, while the results of our amputations are only about 7 per cent. better than those from the same operation in the Crimea. Allowing the 7 per cent. to represent the difference in surroundings and circumstances of patients, and deducting this from the 33 per cent. gain for temporization, we have remaining 26 per cent. to indicate the advance made by conservative surgery. Surely if statistics are worthy of any credit, this exposition may inspire the hope that "new methods" will not, in time to come, prove so unavailing as their "new methods" seem to have in the Crimean war.

If there has been any question in the mind of the military surgeon as to the value of conservation in shot fracture of shaft of femur, there seems to be no doubt upon that subject in its relation to gunshot wounds of the hip-joint; they certainly are to be treated conservatively, apparently, because in any event the same fatal result must obtain. To again quote Bell:³ "As for a wounded joint, we may take the united experience of all surgeons, which has established this as the true prognostic, that wounds of the joints are mortal." Macleod admits this conclusion with a reservation. He says:⁴ "No class of gunshot injuries prove more uncertain in their results, or are more commonly followed by disastrous consequences." While military surgeons agree that there is little to hope from temporization, amputation and excision have thus far given equally unfavourable results; though it is questionable whether the latter method has been sufficiently tried to deduce from statistics of the operation any logical conclusions. There seems to have been some hope during the Crimean war that good would result from more frequent resort to the operation of excision; but it never came into general use. Of six excisions of the hip-joint, primary and secondary, but one case recovered; this was a primary operation, and naturally led to the conclusion that primary excisions were much more successful than secondary, an opinion justified by the statistics; but the number of cases was too small to establish a principle. Moreover, though this one case recovered from the operation, it can hardly be regarded as a successful case, as the patient, though he lived ten years, never had a useful limb. The records of the Italian campaign (1859) are equally discouraging; four excisions were performed, all re-

¹ Macleod's Surgical Notes on Crimean War.

² Circular Orders, No. VI., Surg.-General's Office, U. S. A., November 1, 1865.

³ Loc. cit.

⁴ Loc. cit.

sulting disastrously, while of the sixty-three operations done during our war (1861 to 1865) but five recovered.

On the other hand, amputation at the joint apparently gives more satisfactory results; for including primary, intermediate, secondary, and re-amputations of our war, the mortality was 78.84 per cent., though in both French and English armies of the Crimea *all* cases of amputation at this joint proved fatal. In view of the Crimean statistics, M. Legouest¹ maintained that amputation at the hip-joint should be abandoned except when the great bloodvessels are involved. If, then, as a *dernier resort*, the operation is decided upon, it should be delayed until the last justifiable moment—immediate primary amputation must *never* be performed in any case. Baron Larrey² indorsed these conclusions, adding, however, an additional indication for operation, in extensive laceration of soft parts about the joint. Brevet Lieut.-Col. G. A. Otis, Medical Department U. S. Army,³ in his report upon coxo-femoral amputations during the war 1861 to 1865, dissents from views previously obtaining in regard to this operation. He says:—

“1st. We have learned that the primary operation for traumatic causes is not uniformly fatal, as has latterly been taught, and are enabled to define three conditions under which it should be undertaken, while two other conditions in which it may be justifiable are left *sub judice*. 2d. Much evidence has been brought to controvert the prevailing doctrine that disarticulation at the hip is an exception to the general rule requiring all amputations, deemed indispensable, to be performed immediately, the eighteen intermediate amputations performed during the war having all resulted fatally. 3d. We have proved that secondary amputations at the hip for necrosis of the whole of the femur, or for chronic osteomyelitis following gunshot injuries, may be performed with as successful results as hip-joint amputations for other pathological causes. 4th. It has been shown that when, after amputations in the continuity of the thigh, the stump has become diseased, reamputations at the hip may be done with comparative safety.”

With these facts in view, and in the light of experience gained during the Franco-Prussian war, 1870–71, Prof. Von Langenbeck⁴ naturally reaches the conclusion that the statistics of gunshot wounds of the hip thus far obtained, have not established the principles upon which this lesion should be treated. In fact, their teachings have rather resulted in evil, for the very hopelessness with which this injury has been hitherto regarded, leads to a hasty examination, and an equally hasty conclusion that the unfortunate patient was beyond the pale of surgery, because, forsooth, it is written, “wounds of the joints are mortal.” Prof. Von Langenbeck believes that an early and accurate diagnosis in these cases is essential to their cure, and that the sooner this fact is realized by military surgeons, the sooner will statistics of the future give very different results from statistics

¹ Mémoires de la Société de Chirurgie, 1860.

² Loc. cit.

³ Circular No. 7 W. D., S. G. O., Washington, D. C., July 1, 1867.

⁴ Surgical Observations on Gunshot Wounds of the Hip-joint, translated by J. F. West, etc.

what *not* to do, for between expectation, excision, and exarticulation, the lines are so closely drawn that there could scarcely be an imputation of bad surgery if resort was had to either method of treatment. An appeal to civil statistics of excision in cases of morbus coxarius proves but little more satisfactory, the same doubt of the advisability of this operation; and the same discrepancy in results again meet us. In this connection, I was particularly impressed with the conclusions of Mr. Holmes, as set forth in a clinical lecture on "Results of the Operation of Excision of the Hip," in which he says, "from what I have myself seen of the operation I should have its claims to adoption, in suitable cases, not on its ultimate results being superior to the natural cure, but on its success in saving life in cases where the natural cure appears improbable." In other words, the operation is to be regarded simply as a forlorn hope, a something to be done, when Nature's efforts have proved unavailing, and the unfortunate patient is about to succumb to the disease. But even this concession has a reservation, for Mr. Holmes further remarks, "we can never say that the natural cure is impossible, except in cases where recovery from the operation of excision is so also."

Such an opinion from such authority is in itself almost enough to condemn the operation. But what is left for our patients? The picture is familiar in all its Hogarthian outlines to every surgeon; our author colours it but delicately when he says:—

"We know the length of time and the amount of care which such cases require when carious bone has to be gradually removed by ulceration or necrosis, and deep-seated abscesses or long sinuses have to close up. Many patients require years, and some require many years, of the most sedulous care before they are well, or indeed out of danger of a fatal relapse."

The experience of our own countryman is undoubtedly happier than that of English surgeons. Dr. Sayre, whose opinion of excision as an operation might be regarded as that of an enthusiast, did not the successful results of his cases justify it, says:²—

"The most favourable cases healed by kindly nature . . . have been left with permanent deformity, and with a very much less useful limb than those which have been cured by exsection. I have now performed this operation over fifty times, and can, therefore, speak with positive assurance upon this subject."

Mr. Holmes believes³ that, though the mortality from direct results of the operation is not great, only about one-quarter of the cases operated upon result in a complete and permanent cure; while, on the other hand, Dr. Sayre's⁴ cases which recovered, all had "more or less good motion," excepting one, in which the after-treatment was left in other hands.

As to the mortality of this operation in civil practice, the following table, quoted from authorities therein named, will give an approximation:—

¹ Medical Times and Gazette, London, vol. ii., No. 1427.

² American Clinical Lectures, vol. i.

³ Loc. cit.

⁴ Loc. cit.

	Percentage of mortality ¹ in civil surgery.
Barwell (London)	36.36
Leisrink (Hamburg)	63.60
Sayre (New York)	25.00(?)
Mean percentage of mortality	41.65

Which is in somewhat striking contrast with the results of the same operation, as recorded, in four wars.

	Percentage of mortality in military surgery.
Crimean war	83.33
Italian campaign, 1859 (French)	100.00
War of rebellion	91.17
Franco-Prussian war	86.66
Mean percentage of mortality	90.29

There can be no question that the circumstances under which this operation is performed in the one case and in the other differ widely, so far as the primary operation for shot fracture is concerned, but the conditions of patient and place in the secondary operation are not necessarily so far removed from those which obtain in the same operation for morbus coxarius that the military surgeon can afford to leave the latter entirely out of consideration. The differences of opinion which undoubtedly exist between civil surgeons as to the value of excision in disease of the hip find their counterpart in the same differences which army surgeons entertain relative to the proper treatment of shot-wound of this joint. In the hope of contributing towards the final solution of these questions I present the following case:—

CASE.—Sergeant W. L., Company "M," 4th U. S. Cavalry, admitted to Post Hospital, Fort Fetterman, Wyo. T., March 29, 1877, with gunshot wound of right hip-joint; is an American, aged 22 years. L. was wounded in a cavalry fight with Cheyenne Indians, November 25, 1876. The bullet (probably conoidal, calibre 50, weighing 412 grains) entered right groin three inches below and slightly internal to anterior superior spinous process of ilium, and two and three-quarter inches external to symphysis pubis, passing obliquely backward through hip-joint it fractured neck of femur, notched posterior segment of rim of acetabulum and made exit in gluteal region at point on a right line joining the great trochanters, twelve and three-quarter inches from left, and four and one-quarter inches from right sides (present dimensions). Immediately after receiving wound pa-

¹ The percentage of useful limbs is estimated as follows:—

	Percentage of useful limbs.
Barwell	67.85
Holmes	42.84
Sayre	90.00
Mean percentage	69.89

tient was carried to rear, had a plaster-of-Paris bandage applied, was dragged on a travois¹ over an almost impassable country, during weather so cold that mercury froze, reached supply-camp on third day, when plaster bandage was removed and reapplied; and finally, he was carried thence to Cantonment Reno in an ambulance wagon. Patient was received into a temporary hospital at latter place after a five days' journey over a country where roads are unknown, in weather of the utmost severity, and under circumstances of hardship which skilful care and unremitting attention could but little alleviate. A week after arrival at Reno the plaster bandage was removed, the limb elevated, and the wounds front and rear, now discharging pus freely, were treated with simple dressings. In four weeks the wound of entrance closed, and, though the exit was still discharging, an immense abscess formed in and about the joint which pointed in anterior direction; finally opened spontaneously, and remained so for several months. A light extending weight was used for a short time, and no medicine given, except occasionally morphia for pain and physic for constipation.

March 24, 1877. Patient was transferred from Cantonment Reno, and after five days' journey on a stretcher, slung in an army wagon (a very comfortable method of locomotion), reached Fort Fetterman, Wyo. I found his condition as follows. Very emaciated, pale, and pain-worn; weight about 100 pounds (striking contrast with the 180 pounds, weighed at date of injury); thoracic and abdominal viscera apparently healthy;² pulse and respiration greatly accelerated; two suppurating sinuses were found leading into articulation in positions already indicated; and both hip and knee-joints ankylosed (fibrous). Patient had not moved from recumbent position since receiving injury, and could not even be raised upon a bed-pan without great pain. Immediately upon arrival he was put under tonic treatment, with milk-punch, cod-liver oil, and generous diet; the wounds were dressed with carbolic acid solution (one per cent.); the bowels freely opened and kept regular. When patient had fairly recovered from exhausting effects of journey, a side splint, after Sayre's short splint, was applied, which enabled him to be moved without pain (this was relieved when in bed by an extending weight of eighteen pounds). He soon grew sufficiently strong to walk about on crutches, and until a few weeks before operation, took considerable exercise in the open air. Morphia was given hypodermically from time to time in increasing quantity to allay pain, never absent. These measures were instituted in the hope that suppuration would be checked, bony ankylosis result, and the patient recover with a stiff but moderately useful member. Unlike those cases of morbus coxarius which have progressed to the third stage and left the leg distorted and dislocated, here we had neither of these conditions, the limb was straight, in its proper place, and exactly like its fellow,

¹ A rude horse litter.

² There were functional derangement of heart and anæmic murmurs, but I could discover no organic difficulty, either of heart or lungs. The remarkable rapidity of pulse and respiration in this case are features of no little interest. There seems to be no definite relation existing between these and the temperature, and no apparent cause. A similar case is reported to have occurred during the Crimean war. The operation was secondary, after shot fracture of neck of femur, not implicating head of bone. The patient lived two weeks, and finally died of exhaustion; while he lived the pulse remained very high, never below 120, though his aspect was so calm "it led one to expect a more subdued state of the circulation." (McLeod's Notes on the Surgery of the Crimean War.)

except there was no joint at the hip, only a suppurating sore, which discharged so freely as to leave no doubt of the presence of carious bone in the articular cavity. Certainly, if there was ever a case of hip-disease (traumatic or idiopathic) which held out reasonable hope of recovery under the expectant plan, this was one; and it was in this belief that I instituted the line of treatment already indicated. The patient had everything in his favour,—a comfortable habitation, plenty of nutritious food, sufficient air and exercise, the most careful attention, and yet, though, at first, there was an apparent gain, I came finally to see that he was gradually but surely failing; the suppuration still continued as profuse as in the beginning, and confirmed a suspicion long entertained, but which could not be verified previous to operation, that when the neck of femur was fractured, the round ligament ruptured, and the head of the bone lay, a foreign body, in the joint.¹

It was simply a question as to whether or not the patient had sufficient strength remaining to get rid of dead bone still in the joint, which must yet be considerable in amount. I believed not, for he grew so feeble, and complained of so much pain towards the last, it seemed to me but a question of weeks between an operation or death. The expectant plan had been fully and fairly tried. The patient had suffered "all the dangers of a nine months' cure," with its weary travel, and I now resolved to operate at once. The excision (after Sedilott) was done September 28, 1877, and the condition of joint found to be as surmised. There was partial bony ankylosis; spiculæ of bone (after the manner of flying buttresses), had been thrown out front and rear, and though yet but slight, firmly bound the femur to the pelvis; in the cotyloid cavity lay the caput femoris, reduced to half its normal size, and more resembling a petrified sponge than the dense head of the femur. This mass was easily removed; $2\frac{1}{4}$ inches of shaft of femur (including trochanters) sawn off; a small spicula of dead bone gouged out of notch in acetabulum, and the fibrous adhesions about knee-joint broken up. This completed the operation; easily performed, and almost bloodless. There was a large abscess burrowing along femur about five inches, filled with pus, which discharged through incision. The neck of femur looked rather as though it had been cut across by some sharp instrument, than fractured by a bullet, and was not fissured in any direction; the acetabular cavity was apparently healthy. The wound was thoroughly cleansed, a long drainage tube introduced, the edges approximated with sutures, and dressed antiseptically; not a single ligature was used during or after operation; the hemorrhage was slight; purulent discharge profuse. Extension straps and bandages were then applied, and the patient placed in a double splint² of domestic manufacture, somewhat after the fashion of Sayre's "cuirass," with an extending weight of eighteen pounds.

¹ I was present at a clinic held by Prof. Sayre, in Bellevue Hospital, N. Y., a few years since, when he operated on a case of morbus coxarius, presenting exactly these features. The patient, a child, had fallen upon the hip and sustained an intercapsular fracture of femur with rupture of ligamentum teres; when the excision was done, these conditions were at once diagnosed and verified.

² This splint is simply a light iron frame, made to loosely fit the lower extremities posteriorly, and extending from the ankle externally to the waist, internally to about two inches below the perineum. The limbs are placed at an angle of 15 or 20 degrees to facilitate use of bed-pan. Such a splint can be made by any blacksmith; and though not so expensive an instrument as the Sayre "cuirass," I think, answers

Sept. 28 (after operation). Patient quite weak. To have *sp. vini gallici* \mathfrak{z} ij in divided doses, at short intervals. Effects of anæsthetic having disappeared, complains of intense pain in hip and knee-joints. To have *morph. sulph. gr. j* (hypodermically) at 1 P. M.; *gr. $\frac{1}{4}$* at 2 P. M., and *gr. $\frac{1}{6}$* every hour after if necessary. (Took altogether in twenty-four hours *gr. 2 $\frac{3}{4}$* .)

29th. Doing well; opiate allayed pain; patient passed a comfortable night; dressing not changed; no perceptible odour from wound; temperature normal; pulse 100. To have *sp. frumenti* \mathfrak{z} iv. in a quart of milk during day; *quinia sulph. gr. j* every two hours; *morph. sulph. pro re nata*; not to exceed one grain in twenty-four hours; milk diet.

30th. Complains of considerable pain. Wound dressed; discharge very free and somewhat offensive, slightly tinged with blood; to continue treatment, and have oil bath once daily. Temperature and pulse unchanged.

October 1. Discharge copious, saturating bandage; is healthy, non-offensive pus; wound dressed; bowels constipated. To continue treatment, and have *magn. sulph. \mathfrak{z} j.* A. M., temp. $98\frac{2}{3}^{\circ}$; pulse 110; respiration 21. P. M., temp. $101\frac{2}{3}^{\circ}$; pulse 118; respiration 25.

2d. Passed restless night; no operation of bowels; to have at 4 P. M. *magn. sulph. \mathfrak{z} ss*, and, if non-effective, at 9 P. M. *calomel gr. x, et jalap gr. v.* The latter dose was given; produced free catharsis and great relief. A. M., temp. $101\frac{2}{3}^{\circ}$; pulse 112; respiration 17. P. M., temp. $100\frac{2}{3}^{\circ}$; pulse 115; respiration 24.

3d. No apparent change; still requires morphia in varying amounts, and constantly complains of pain; wound dressed; edges here and there uniting by first intention; drainage-tube acting effectively. A. M., temp. $98\frac{4}{5}^{\circ}$; pulse 104; respiration 21. P. M., temp. $99\frac{1}{5}^{\circ}$; pulse 106; respiration 17.

4th. Passed restless night; complains of griping pain in bowels; is weak from continued catharsis; has tenesmus; wound dressed; is doing well; discharge still very profuse. To omit quinia; continue treatment; have *sp. vini gallici \mathfrak{z} j* 10 A. M. and 4 P. M., and suppository, *opium gr. vj* at 7 and 9 P. M. A. M., temp. $99\frac{3}{5}^{\circ}$; pulse 103; respiration 27. P. M., temp. $98\frac{4}{5}^{\circ}$; pulse 110; respiration 24.

every purpose, and has at least two virtues not possessed by its more elegant prototype—cheapness and accessibility. The method of application is as follows: Splint having been thoroughly padded (the padding resting upon roller bandage, carried from side to side of each limb from bottom to top, a small space being left for defecation), the patient is placed therein, and secured by bandages from ankle to groin, and a belt about the waist; the foot-piece, a bit of board, is movable on the injured side, and perforated with holes through which pass the extending straps, to be secured to a bar attached to splint, or to rope carrying weights and playing over a fixed pulley. On the sound side the foot-piece is fixed, the foot presses against it, the leg is securely bound and affords perfect counter-extension. If a patient has to be moved from camp to camp, or from bed to bed, the extending straps are secured to the bar, and he can be carried with the least inconvenience and pain. There is nothing about this apparatus original with me, and I have described it so minutely, simply because I believe it to be very essential to the successful after-treatment of hip-excision cases, and because it is so easily improvised. If iron and a blacksmith are not at hand, the double-splint, made of three pieces of board (not unlike, in form, a pair of wagon shafts), recommended by Dr. Hamilton in cases of fracture of femur in children, would do almost as well, and could be constructed under the most adverse circumstances.

5th. More comfortable; wound looks healthy; bed-sore on sacrum (chronic since shortly after receiving wound), is spreading in spite of preventive measures; discharge from wound so copious as to keep sore constantly bathed in pus; dressed (with wound) antiseptically. To continue treatment, omitting brandy, and opium suppository. A. M., temp. $98\frac{3}{4}^{\circ}$; pulse 108; respiration 24. P. M., temp. $98\frac{3}{4}^{\circ}$; pulse 101; respiration 24.

6th. The great advantage of double splint is fully demonstrated. The patient can be turned on his side to permit of wound being dressed, and moved to another bed while his own is being aired and changed, with the least amount of pain. The extending adhesive straps, causing some uneasiness, were removed and reapplied. A. M., temp. $98\frac{3}{4}^{\circ}$; pulse 102; respiration 26. P. M., temp. $98\frac{3}{4}^{\circ}$; pulse 106; respiration 28.

7th. Bowels acting regularly; appetite very capricious; wound looks well; bed-sore still spreading. A. M., temp. $100\frac{1}{4}^{\circ}$; pulse 125; respiration 27. P. M., temp. $99\frac{3}{4}^{\circ}$; pulse 120; respiration 30.

8th. Passed restless night; very weak and unable to endure suffering; opiate is given freely up to limit of one grain morphia in twenty-four hours; wound dressed; no unfavourable change in appearance; bed-sore spreading and ugly. A. M., temp. 99° ; pulse 102; respiration 24. P. M., temp. $99\frac{1}{4}^{\circ}$; pulse 124; respiration 21.

9th. Very weak, but cheerful (when pain ceases a little); wound still discharges freely, frequently saturating bandages, and interfering with complete asepsis. (The utmost care was taken to prevent contamination, but not always successfully.) A. M., temp. $98\frac{3}{4}^{\circ}$; pulse 120; respiration 12. P. M., temp. $99\frac{1}{4}^{\circ}$; pulse 116; respiration 16.

10th to 16th. Between these dates condition remained without marked change. Wound was dressed daily, union had occurred, except at two points; one, anterior, communicating directly with large deep abscess; the other, posterior, giving exit to drainage-tube. The bed-sores (several had appeared) were healing kindly, and altogether there was a slow, but sure improvement. Treatment continued. Appetite very delicate.

17th. Passed a very restless night; complains of pain in all the joints, and has diarrhoea. There had been occasional slight spasmodic action of injured limb, not very troublesome. On this date it became excessive, so that one spasm followed another in constant succession, causing excruciating agony; the action seemed entirely confined to ham-string muscles. Wound dressed, discharge less, but healthy; continue treatment. To have potass. brom., gr. v, every two hours; sp. vini gallici, $\mathfrak{z}\text{ij}$, and opium suppository, gr. v, at 9 P. M.

18th. Spasmodic action not quite so severe, though sufficient to cause much suffering. Wound dressed, discharge slight and healthy; bed-sores doing well. To continue treatment, giving potass. brom., gr. x, every three hours, omitting brandy, and opium suppository.

19th. Passed comfortable night, with very little spasmodic action. Discharge from wound so slight and healthy that drainage-tube was removed. Antiseptic dressings continued.

20th. Fever running high; spasmodic twitching continuous, and exhausting. Wound dressed, discharge but slight, looks healthy. To continue treatment, have tr. digitalis, $\mathfrak{m}\text{x}$, every four hours; quinae sulph., gr. x, every three hours; potass. brom. et chloral hydrate, \mathfrak{aa} gr. x, p. r. n. A. M., temp. $102\frac{3}{4}^{\circ}$; pulse 150; respiration 25. P. M., temp. $102\frac{3}{4}^{\circ}$; pulse 137; respiration 32.

21st. Spasm almost uncontrollable; is excited by the slightest stimulus,

as sudden noise, a touch, draught of air, in fact any unlooked-for occurrence, even the moving of patient's finger. Wound dressed, discharge unchanged; lower sinus contracting; a probe introduced through upper sinusses passes in along bone six inches; syringed sinusses with carbolic solution (five per cent), and dressed antiseptically. To continue treatment, reduce potass. brom. et chloral hydrate to gr. v every three hours, and omit quinia. A. M., temp. $101\frac{3}{4}^{\circ}$; pulse 125; respiration 36. P. M., temp. 102° ; pulse 132; respiration 28.

22d. No noticeable change; still complains of great pain. Bowels open and regular; appetite nil, must be forced even to take milk; discharge from wound scanty and somewhat offensive. To continue treatment. A. M., temp. $100\frac{1}{4}^{\circ}$; pulse 122; respiration 28. P. M., temp. 102° ; pulse 132; respiration 29.

23d to 24th. No improvement; patient very weak, hardly able to endure the slight fatigue and pain of dressing wound; is constantly under influence of narcotics, and continually demanding something to relieve his sufferings. To continue treatment, increase tr. digitalis to m. xv, every three hours, and have quiniæ sulph., gr. xv, at 9 P. M.

25th. Slight improvement; is brighter, and complains less of pain in hip and knee. Discharge from wound scant, but healthy. To continue treatment, omit potass. brom. et chloral, and have R. Strychniæ sulph. gr. ss.; cannab. ind. gr. xv; pulv. rhei, gr. xx; quinine, gr. xxx. M. Divide pil. No. xxx. One pill every three hours. A. M., temp. $98\frac{1}{2}^{\circ}$; pulse 118; respiration 24. P. M., temp. $99\frac{3}{4}^{\circ}$; pulse 132; respiration 24.

26th to 29th. During this time the wound was dressed daily; the discharge was scanty, but healthy; the bed-sores had not healed, but were not spreading; the spasmodic action continued. No change in treatment.

30th. Passed restless night; complains of severe pain of throbbing character about joint; cicatrix, and orifices of sinusses red and puffy; redness extending some distance on either side; discharge slight; dilated lower sinus and reintroduced drainage-tube. To continue treatment, omit digitalis, and have quiniæ sulph. gr. xx, at 9 P. M.

31st. Very copious discharge from wound saturating bandages and running into bed. On removing dressing pus is found pouring freely from drainage-tube and anterior sinus, as well as through the old wound of exit which had opened since last dressing. (This track closed spontaneously shortly after patient arrived.) Wound looks better, and patient feels much more comfortable, though very weak. To continue treatment.

Nov. 1 to 5. General condition unchanged; the discharge continued very copious; bed-sores constantly bathed in pus are extending, though superficially; spasmodic actions still a most disagreeable feature; only partially controlled by morphia, of which an average of half a grain daily has been taken, hypodermically, since operation. Wound dressed daily, and treatment continued.

6th. Discharge less copious; again removed drainage-tube; patient very comfortable, though still troubled with the spasmodic jerking; all functions regularly performed.

7th to 10th. The sinusses again contracted, and old wound of exit nearly closed; discharge from anterior opening still free, of a thick cheesy character. At every dressing the greatest care was taken to inject all sinusses thoroughly with carbolic solution (5 per cent.), and to maintain compression, both with adhesive straps and bandages, to prevent any further bur-

rowing of pus (from time of operation). Patient complains of copious cold sweats occurring both day and night. To have atropine gr. $\frac{1}{10}$, hypodermically, once daily; be sponged with alcohol and water, equal parts; omit strychnia pills.

11th. Discharge apparently entirely from deep abscess, and principally through anterior sinus; legs are twice weekly removed from splint and exercised; both are quite stiff, the right, at knee-joint, especially so; there is here considerable thickening, and some excoaration; the latter due to traction of extending straps. To have quiniæ sulph., gr. x, at 9 P. M., with chloral hydrate, gr. x, during night.

12th. Passed comfortable night; took chloral as prescribed at 1 A. M.; discharge quite free from abscess; of a thick, curdy character; non-offensive odour; bed-sores all doing nicely; exit of bullet-track entirely closed; spasm still frequent and painful; appetite improving slightly.

13th. The case has now practically resolved itself into one of chronic abscess. In this view, believing that a cure of the abscess would result in successful termination of treatment, and a failure to cure in death of patient from exhaustion, resolved to forcibly distend suppurating cavity with antiseptic solution (Collander's method). Having introduced long tube of universal syringe deep into cavity, injected 5 per cent. solution carbolic acid $\frac{5}{16}$; result, rupture, instead of distension of pyogenic membrane (miscalculation of capacity of abscess, and force applied). Patient without pain; antiseptic dressing, as usual, and continue treatment. To have quiniæ sulph., gr. xxx, at 9 P. M., given gr. v at dose; the whole to be taken in half hour (rule always followed with large doses of quinine). A. M. temp. $98\frac{1}{2}^{\circ}$; pulse 116; respiration 15. P. M. temp. $103\frac{1}{2}^{\circ}$; pulse 142; respiration 38.

14th. Passed restless night; complains of soreness in tissues of thigh; anterior and external (abscess was posterior and internal); considerable swelling in this region, with boggy feel of cellulitis; wound dressed; discharge very scanty from both openings; no spasmodic action. To continue treatment, and have quiniæ sulph., gr. xl, at 9 P. M. A. M. temp. $101\frac{3}{4}^{\circ}$; pulse 128; respiration 24. P. M. temp. $104\frac{1}{2}^{\circ}$; pulse 142; respiration 38.

15th. Swelling and soreness of tissues still the marked feature. Introduced hypodermic needle, but could discover no pus; complains of great pain, which patient says is near surface and not at bone as formerly; spasm entirely ceased; discharge from wound slight and healthy. To continue treatment, have tr. digitalis, $\mathfrak{m}\text{xv}$, tr. ferri chloridi, $\mathfrak{m}\text{x}$, every three hours, and quiniæ sulph., gr. x, at 9 P. M. A. M. temp. 101° ; pulse 114; respiration 21. P. M. temp. $100\frac{3}{4}^{\circ}$; pulse 115; respiration 20.

16th. Passed very restless night; pain increasing, only partly controlled by narcotic (morphia); is very weak; will eat nothing; bowels constipated; tongue coated and dirty; breath offensive; very little discharge from wound. To continue treatment, have pil. hydrarg. gr. v, and quiniæ sulph., gr. x, at 9 P. M. A. M. temp. $101\frac{1}{2}^{\circ}$; pulse 115; respiration 24. P. M. temp. $100\frac{3}{4}^{\circ}$; pulse 116; respiration 20.

17th. Discharge from sinuses very copious, saturating bandage and bed clothing; odour exceedingly offensive. Patient slept quite well, and says he has less pain; tissues still very sore to touch; bowels moved freely. To have quiniæ sulph., gr. x, at 9 P. M. A. M. temp. $99\frac{3}{4}^{\circ}$; pulse 116; respiration 21. P. M. temp. $100\frac{1}{2}^{\circ}$; pulse 115; respiration 20.

18th. Sweats continue, though not so free; mydriasis complete, much to patient's discomfort; thinks he is losing eyesight; discharge from wound very copious, offensive, and rusty; bed-sores again very troublesome; swelling somewhat diminished. To continue treatment, and have quiniæ sulph., gr. x, at 9 P. M. A. M. temp. $98\frac{1}{2}^{\circ}$; pulse 100; respiration 20. P. M. temp. $100\frac{2}{3}^{\circ}$; pulse 110; respiration 30.

19th. Pus pouring out copiously through sinuses, and along track of entrance, which reopened during night; discharge still very offensive and rusty; swelling and pain considerably diminished; complains of nausea. To continue treatment; omit digitalis and iron, and have quiniæ sulph., gr. xv, at 9 P. M. A. M. temp. $100\frac{1}{2}^{\circ}$; pulse 122; respiration 28. P. M. temp. $100\frac{2}{3}^{\circ}$; pulse 122; respiration 28.

20th. Patient much more comfortable. Discharge diminishing, still offensive; whole appearance improved, eyes bright, tongue clean. To continue treatment. A. M. temp. $99\frac{1}{2}^{\circ}$; pulse 103; respiration 18. P. M. temp. $100\frac{2}{3}^{\circ}$; pulse 111; respiration 23.

21st. Double splint replaced by single straight splint. Discharge still quite free, but non-offensive, and in character very different from curdy matter which came from deep abscess before rupture. There are still some pain and swelling. To continue treatment.

22d to 24th. Continued improvement; less pain and more appetite; discharge still quite free. Bed-sores inflamed and painful. Patient becoming reconciled to new splint, got up for first time (22d) since operation, and by aid of nurse and crutches walked to chair, near bed, and sat in it a few minutes, a position not before assumed in a year; renounced bed-pan, used commode (23d). Treatment continued; had quiniæ sulph. gr. x. each night, and on 24th tr. ferri. chlor. \mathfrak{m} xv three times daily.

25th. Very little discharge; bed-sores doing well; pain but occasional. Spasmodic jerking again, first time since 13th inst., not so severe as formerly; sweating less; atropine continued as usual. To continue treatment, and have quiniæ sulph. gr. x at 9 P. M.

26th to 30th. During this time improvement was very gradual, the spasmodic action continued, and even extended to left leg; the constant jerking irritated bed-sores, which could not in any way be protected from some pressure. Daily exercise was taken; considerable difficulty experienced with all joints of lower extremities, which were stiff, and sore; massage was regularly employed. Discharge had greatly diminished, and anterior opening of wound track again closed; superior and inferior sinuses very much contracted; probe arrested after entering half an inch. On 27th inst. bowels becoming constipated were relieved by simple enema, and tr. ferri. chloridi omitted. Appetite continued precarious, with but slight improvement. No nausea. Pain still present, relieved by morphine, now reduced to maximum of gr. $\frac{1}{2}$ (hypodermically) in twenty-four hours. Patient had taken milk punch, cod-liver oil, had oil baths and milk diet, occasionally varied with solid food, when he could be induced to eat it, almost continuously since operation. Antiseptic dressing, as usual, was renewed each day, an operation much more difficult and painful since removal of double splint. To continue treatment, and have every alternate night quiniæ sulph. gr. x.

Dec. 1 to 3. Patient still very weak; handles crutches and moves about with greater difficulty than at first; considerable soreness at hip and knee, and stiffness of all joints; finds it impossible to touch left heel to ground, ankle so stiff; soon gets fatigued while sitting in chair; spasm still per-

sistent; sweats very freely in spite of atropia, and alcohol baths; very little discharge of healthy character. To continue treatment.

4th to 9th. Patient had chill on the 4th, more of a creepy cold feeling than a well-defined chill; probably caught cold while at stool; muscles of face and neck, as well as lower extremities, very stiff; unable to move head forward without assistance, or to open mouth; spasm intense and painful; discharge growing less, is thin and healthy; bowels constipated; abdomen tympanitic; appetite unimproved; sweats profuse. To continue treatment, have simple enema, pil. hydrarg. gr. v. (4th), with Rochelle salts ʒij in morning; chloral hyd. gr. xv every four hours, quinine sulph. gr. x 9 P. M. (5th). From 9th instant there was scarcely an untoward symptom, convalescence progressed slowly but surely, stiffness of neck disappeared entirely about 15th instant; tympanitis lasted three days; spasm persisted, but with greatly reduced violence, nearly two weeks after extending weight was removed (27th inst.). Patient had daily exercise, increasing excursions from ward to ward, until finally, January 10, 1878, he took his first walk in open air. Discharge grew less in amount, ceased 13th inst., and dressings were removed entirely 15th inst. Bed-sores all healed, except one on sacrum, nearly closed, dressed with simple cerate. December 27th, side splint was removed and the treatment practically ended. Appetite quickly returned, until it grew beyond satisfaction; patient took meals at table during Christmas week, first time in fifteen months; joints and muscles gradually lost rigidity under massage and use; motion at hip quite free in all directions, and joint sufficiently strong to bear whole weight of body as early as December 30th; sweats disappeared with returning strength. Medicines were discontinued on 17th inst, and afterwards only occasional doses of quinia given.

Shortening of leg on getting up two inches; weight 100 pounds, increased to 127 pounds Jan. 13, 1878; morning and evening temperature varied about one degree for two months after convalescence was established, when it finally settled down to the normal; pulse continued higher than the other symptoms appeared to justify, though at last examination there was no discoverable organic lesion; motion in every direction at hip was sufficiently free to permit of easy locomotion, and the joint surprisingly strong. It is probable that compensatory falling of the pelvis on right side will reduce apparent shortening to about one inch.

In reviewing this case, not the least important consideration is, when, if at all, under similar circumstances, should an operation be done? I think there can be little doubt that in military surgery, at least, the joint should be excised at the earliest moment after patient has reached an hospital. Prof. Von Langenbeck believes that the mortality attending operation would be less if done within twenty-four hours after receipt of injury. Dr. Macleod also advocates early excision. Such a course has at least three indisputable arguments in its favor: it saves the patient pain, the surgeon work, and the government expense. The extent of operation, the amount of bone excised, of course will depend upon extent of injury, though it seems to have been the rule in surgery that the trochanters must always be removed, for the alleged reason that their presence mechanically prevents union of incision. Von Langenbeck, Otis, and, more recently, other authorities, condemn such unnecessary sacrifice. It

is fair to presume that, in this case, had the joint been simply opened, the detached head of femur removed, a drainage tube introduced, and trochanters left intact, the results would have been even better than those now obtained.

But in any event, the operation, *per se*, is of secondary importance, and we must look for successful results from excision, not in the manner of its performance, but in the after-treatment of the case; herein, I believe, lies the secret which enables Dr. Sayre to recommend excision as the treatment, *par excellence*, for morbus coxarius, a recommendation which, in the light of such statistics as he presents, cannot be ignored. In the after-treatment of this case (as in all secondary excisions for shot wounds of hip), we met with abscesses of greater or less extent, which became the most important elements in its treatment (and an additional argument in favor of primary operations). The spasm, due to rigidity of hamstring muscles, seemed to be governed by no rule; one day severe, the next scarcely perceptible, it baffled nearly every effort at control; narcotics, even in excessive doses, had as little effect as the increasing of the extending weight to thirty pounds or its reduction to six pounds. There was no malposition of limb, and tenotomy was not resorted to, as neither the condition of the patient nor the parts seemed to justify it. A somewhat remarkable fact in this connection is, that with rupture of deep abscess spasmodic action ceased entirely, and did not thereafter recur, excepting very occasionally, with much diminished force.¹

The object of this paper is to invite the attention of the profession to the fact that, as yet, there is no surgical procedure in gunshot wounds, particularly in shot fractures of femur, so successful that it can be accepted as *the* treatment for such cases. With increasing experience, surgeons are coming to believe that their predecessors have pronounced too emphatically upon methods of treatment and disastrous results of certain gunshot injuries, for they have seen many patients who by the old rules should die, not alone live, but possess such useful members, that their wounds are recalled as hardly more than a disagreeable episode.

FORT MONROE, VA., 1881.

ARTICLE XII.

REMOVAL OF THE ENTIRE UTERUS FOR THE CURE OF CANCER OF THE CERVIX, WITH A REPORT OF TWO CASES. By CLINTON CUSHING, M.D., Prof. of Gynecology in the Medical College of the Pacific, San Francisco.

CASE I.—March 1, 1881, I was consulted by Mrs. A. B. for severe pain in the region of the womb. She was apparently healthy, was aged

¹ L. was returned to duty with his regiment in Texas, where he remained for nearly a year, and was finally discharged the service. The limb became very useful, and permitted of locomotion without crutch or cane.

46, and the mother of several children, the youngest of which was nearly grown. She was suffering the most excruciating pain through the pelvis, her suffering evidently aggravated by the condition of her mind, for she had been examined by several medical men, who had all told her that she was suffering from cancer. She had taken opium in large doses to allay the pain, and had twice tried to commit suicide by taking large doses of laudanum.

Upon making a digital examination, per vaginam, I found the characteristic symptoms of carcinoma—the intense hardness of the cervix, the borders of the os excavated by an ulcer that bled upon the slightest touch. The uterus was perfectly movable, and the surrounding structures seemed free from disease. It was decided to remove the uterus according to Freund's method.

On the following day, assisted by Drs. Plummer, Ellenwood, Regensburger, Jewell, and Farnum, the abdomen was opened in the linea alba, the upper portion of the broad ligaments were ligated, and the ligatures cut short; then, taking a heavy needle fourteen inches in length, sharp at both ends, with an eye near one end, such as is used by mattress-makers, I threaded it with silver wire, No. 14 gauge, and passed either end of a loop of wire into the vagina, so that when the loop was drawn tight, it included the lower half of the broad ligament. The loops of wire were then twisted tightly from the vagina, and the uterus separated from the surrounding tissues by means of a pair of strong, long-handled, slightly curved scissors. The opening in the upper end of the vagina was partially closed by two silk sutures, the ends left long and hanging in vagina. The ends of the wire loops were also left long, so as to project into the vagina. The abdominal wound was closed in the usual way with silver wire sutures. The antiseptic precautions were observed, and the spray was used.

The operation occupied an hour and forty minutes, and was attended with considerable difficulty on account of the large amount of fat in the abdominal wall, and also in the omentum. There was but little loss of blood. Ether was used as an anæsthetic. The shock was very marked. After being placed in bed, and the effects of the ether having subsided, she conversed with her family, but remained very weak, although brandy and ammonia were freely administered. She gradually sank, and died fourteen hours after the operation.

No post mortem was made. A microscopical examination of a section of the cervix demonstrated it to be carcinomatous.

CASE II.—Mrs. S. G., æt. 47, a native of Poland, one child, now 24 years of age. Menstruation had ceased two years since. She applied to me Sept. 1, 1881, at the suggestion of Dr. Pawlike, her family physician, on account of a sharp lancinating pain in the region of the uterus, and also because there was a hemorrhage from the uterus after each sexual connection. She was pale and anæmic, and said she had always been a delicate woman.

An examination showed at once the characteristic condition found in carcinoma of the cervix. The cervix was slightly enlarged, very dense, with an excavated ulcer about the size of the end of the thumb surrounding the os. The body of the uterus was quite small, and freely movable. The difficulties attending my former operation, and the fatal result following so rapidly upon its conclusion, led me to a somewhat extended study of the anatomy concerned, and after making several dissections upon the

prepared cadaver, I became convinced that the uterine artery, where it is reflected off from the upper portion of the vagina upon the side of the cervix, could be ligated from the vagina before any incisions were made, and the blood supply in this way cut off, in a great measure, from the tissues to be divided in the removal of the uterus.

The operation of removal of the entire uterus having been decided on, on Sept. 4th, assisted by Drs. Lane, Pawlike, Regensburger, and Farnum, the patient was etherized, and placed upon her left side on a table before a window; the largest-sized Sims's speculum introduced, and the cervix seized with a vulsellum forceps, and slightly drawn down; any considerable displacement of the uterus was avoided, in order not to disturb the relation of the parts, for the ureter lies in such close relation to the uterine artery, at the junction of the vagina and cervix, that the greatest danger exists of involving the ureter in the ligature, unless great care is observed, this accident having occurred several times under the hands of the German operators. A strong, short, slightly-curved needle, armed with a heavy silk ligature, was now introduced from below backwards, through the roof of the vagina, by means of a long-handled needle-forceps, the needle passing within a quarter of an inch of the cervix, and including the tissues as high as possible in its sweep. After a ligature had thus been introduced upon either side of the cervix, and firmly tied, the uterus was separated from the bladder by means of a pair of long-handled slightly-curved scissors. Douglas's pouch was opened in the same manner, the fundus of the uterus was drawn down with a vulsellum, and retroverted until the Fallopian tubes and the upper portion of the broad ligament came within reach. A ligature was then passed through the upper portion of the broad ligament, including the spermatic arteries. The blood supply to the uterus was now controlled, and the organ was allowed to return to its position. Now drawing down upon the cervix, and keeping very close to the uterine tissue, the uterus was removed easily with the scissors. There was slight oozing of venous blood from a portion of the right broad ligament, which was easily controlled by a ligature introduced with the needle and needle-holder. The ligatures were all left long, and depending from the vagina. The aperture left by the removal of the uterus was not closed, so as to insure perfect drainage. A Goodman's Skene's self-retaining catheter was left in the bladder, and to the end of the catheter was attached a short piece of rubber tubing which conducted the urine into a small vessel placed between the thighs.

It was supposed that there would be considerable discharge from the seat of operation, requiring frequent vaginal injections, but such was not the case; there was but little discharge, and scarcely any odour. Antiseptic vaginal injections were used every second or third day as needed. For the first week she was nourished entirely by enemata of beef-tea, to each of which were added a few drops of laudanum, and two teaspoonfuls of brandy. She then began to take a thin soup of flour boiled with milk.

Recovery was uninterrupted, the temperature at no time being over 101° . The ligatures came away at the end of four weeks, except one which was removed with some difficulty. She is now, four months since the operation, in her usual health, with no indication, thus far, of a return of the disease. The roof of the vagina is closed by a smooth scar, and no tenderness exists on pressure.

In reporting the above cases I had two objects in view, first, to place upon record the results, in these two cases, of an operation which is still

comparatively new, and the value of which is still unsettled; and secondly, the methods employed in the procedure.

In the last operation the sponges, ligatures, and instruments were kept immersed in a five per cent. solution of carbolic acid, and the hands of myself and assistants were washed clean with soap and warm water, and then dipped in the five per cent. solution. The spray was not used. In the first operation the shock was great, the patient evidently dying from this cause; in the second operation there was but little if any shock.

We are compelled to look to Germany for any statistics in regard to removal of the uterus for the cure of cancer, for it is only there that it has been performed sufficiently often to form any basis for an opinion as to its value, and even now, it is too soon to judge, for in many of the cases that are now reported cured, the disease may yet return at the seat of operation and cause death. Olshausen reports six cases of removal of the uterus through the vagina, all of which recovered; he also reports forty-one cases of the operation by the vaginal method performed by others, of these twenty-nine recovered and twelve died. Where the uterus has been removed by abdominal section, the results have been much less favourable. Kaltenbach reports only thirty successes out of eighty-eight operations; and Kleinwachter reports only twenty-four recoveries out of ninety-four operations. Relapse of the disease will probably materially lessen the number of cases that are above reported as successful.

Dr. L. C. Lane was the first to perform the operation on the Pacific Coast; he operated in 1878, removing the uterus through the vagina; the patient recovered from the immediate effects of the operation, but ultimately died several months afterwards from what was supposed to be the bursting of a pelvic abscess into the abdominal cavity, no post-mortem examination being made.

Without taking up the question of the predisposing causes of cancer of the uterus, causes of which we know but little, it is a matter of prime importance to determine if there be exciting causes which are removable, or which are under our control.

The statistics of England show (Sir J. Y. Simpson) that cancer is nearly three times more fatal among women than among men. No part of the woman's organism is so liable to cancer as the uterus; no part of the uterus so liable as the cervix; and no part of the cervix so liable as the mucous membrane that lines it. What condition, then, is commonly present in the cervix, that would act as an exciting cause? I believe it exists in an unhealed laceration of the part consequent upon childbirth or abortion. We have here a point of irritation that often goes on for years unhealed: enlarged and diseased glands in the mucous membrane; hyperplasia of the whole cervix, and often a continuous and irritating discharge from the diseased surface; surely, we have in these cases provocation

enough to set up malignant disease, more especially where there is any predisposing cause.

Waldeyer and other observers have arrived at the conclusion that all cases of uterine cancer are of epithelial origin, that is, commencing upon the surface. Dr. Emmet says that out of two thousand four hundred and forty-seven women in his private practice, who applied to him for some form of sexual disorder, fifty-three cases, or 2.19 per cent., were cancer of the uterus. Of these fifty-three cases, fifty-one had borne a number of children each, and the other two had suffered from criminal abortion; he also says that he has never known a woman to have any form of epithelial cancer of the uterus who had not at some time been impregnated. These are, to my mind, sufficiently good reasons for repairing all fissures of the cervix, when irritable and accompanied by hyperplasia and increased discharge.

From the reports of cases that I have read, and from my own experience, I have been led to the following conclusions:—

First. Do not undertake the operation of entire removal of the uterus if the surrounding tissues are involved in the disease, or the uterus is at all fixed, for the operation is then very difficult, and the disease would certainly return at the seat of operation.

Second. Operate by the vaginal method, it being a much safer one.

Third. Leave the opening made by the removal of the uterus open, so as to allow perfect drainage, there being apparently no disposition to prolapse of the small intestine.

Fourth. Keep a self-retaining catheter in the bladder, in order to avoid its distension, and to prevent the too frequent disturbance of the patient.

I would also suggest that, where it can be done, enough of the diseased structure be removed for a microscopical examination, before the decision is made final as to the advisability of an operation.

ARTICLE XIII.


CENTRAL COLOUR-SCOTOMA—THE ERROR OF ORDINARY TESTS. By JAMES L. MINOR, M.D., Assistant Surgeon to the N. Y. Eye and Ear Infirmary.

THE method ordinarily employed for detecting central colour-scotoma is to have the patient direct the eye under examination to a small spot on a dark background, 30 cm. from the eye. A small piece of cardboard, about 12 mm. in diameter, of the colour to be tested, is slowly brought from the peripheral portions of the visual field towards the centre, and the point at which the colour disappears is noted. This is repeated for the various meridians, and these points, when connected with each other, will

form the boundary line of an area in which the colour is not recognized—a central colour-scotoma—which is accurately and clearly delineated.

In testing for partial central colour-scotoma, or a circumscribed area in the centre of the visual field, over which the perception of a given colour is dulled or diminished but not obliterated, it is customary to adopt much the same procedure, using in this case, however, a small bit of cardboard for fixation, of the same colour as that used for testing the more peripheral colour sense, thus allowing a comparison to be drawn between the colour looked directly at, and that seen in the eccentric portions of the visual field. The small movable coloured card is slowly carried from the periphery towards the centre, and when a point is reached at which this appears of a brighter colour than the central card of fixation, it is noted. This is repeated for the various meridians, and these points are then connected. Thus a boundary line is established which maps out a circumscribed area in the centre of the field of vision over which the colour perception is duller than in surrounding zones—a partial central colour-scotoma.

This way of testing for absolute colour-scotoma furnishes an accurate result, but the method can be improved upon, while that described for partial colour-scotoma is open to the gravest errors. For we there depend upon the comparative brightness of two pieces of card of the same colour seen in different parts of the field of vision; the one placed centrally, and under constant observation, the other in various parts of the field in constantly changing positions. While it is a fact that the normal eye does recognize colours most accurately at the macula lutea, which corresponds to the point of fixation, it admits of easy proof that the most fallacious results may be obtained, if implicit reliance is placed upon it, under all circumstances. And these circumstances are entirely left out of consideration in testing as described above. I refer to the consequences of fatigue of the retina, the importance of which may be judged of by trying the following simple experiments:—

First, a piece of red cardboard, 6 or 8 cm. square, is held before the eye at a distance of about 30 cm., and the eye is fixed upon a piece of black cardboard, 2 cm. square, held over the centre of the red card. After looking at this intently for a half minute or more, the bit of black card is quickly removed, and it will be observed that the space which had been covered by it is of a much brighter red colour than the surrounding red of the card—this bright spot being clearly delineated. The explanation of this is to be found in the fact that all that portion of the retina which had been exposed to the red rays became fatigued by their constant impact, while the small spot which corresponded to the black card was shaded almost entirely from all rays, leaving the retina at that point, when the black card was removed, fresh to respond to the red rays which then impinged upon 

Second. A piece of black cardboard, 6 or 8 cm. in diameter, with a small central red card, 2 cm. in diameter, for fixation, is held at 30 cm. from the eye, which is directed to the red centre. After a few moments, both the black and the red cards are removed, and a large piece of solid red card is quickly substituted. It will be observed that a dull red or brownish spot, corresponding in size and position to the space which had been covered by the central bit of red card, is seen upon the now red field. In this instance, that portion of the retina which received the image of the small red card, became fatigued, the *red nerves* becoming exhausted—while the remaining portions which had been shielded by the black card, responded, with that vigour which rest affords, to the red rays suddenly falling upon its surface, creating the anomalous condition of the appearance of a bright red periphery with a dull brownish centre, when viewing a card of uniform red color. The contrast thus afforded by a *simultaneous* comparison of the apparently different colours is striking. It is just this condition that is brought about when we attempt to map out a partial colour-scotoma by the method of testing usually employed. The central coloured card which is used for fixation and comparison does not change its position, hence its image falls upon a part of the retina, which, though in the normal condition, is extremely sensitive to changes in colour, soon becomes exhausted, and it is then unable to compete in colour-perception with the fresh and untired parts of the retina more distant from the centre, which, under ordinary circumstances, are deficient in colour-perception as compared with the centre. Tested in this way, the scotoma (partial) enlarges and becomes more pronounced, *pari passu*, with the retinal exhaustion of the centre, which increases every moment during the test.

To obviate the central retinal exhaustion, and at the same time to furnish a means of comparison between the central and peripheral colour perception, I have made disks of coloured cardboard about 30 cm. in diameter, which are used as follows: The patient is directed to look at the centre of the coloured disk, and if either an absolute or a partial scotoma exists, it will be plainly mapped out upon the card, where the patient can himself trace the outlines; and this may be kept as a permanent record of the case; or, if tracing-paper of sufficient transparency be at hand, this may be placed over the coloured disk, and the tracing be done upon it, rather than upon the cardboard, which can be preserved for further use. If neither the disk nor coloured cardboard of sufficient size be at hand, we may take the two small bits of cardboard used in ordinary tests, and compare the acuteness of colour perception in various parts of the field of view by placing them, at the *same time*, in different positions, thus allowing a *simultaneous* comparison between them.

A very delicate test is to use a disk of a compound colour,—pink, for instance, which is made up of blue and red, and it is placed among the reds

by ordinary observers; with the red blind, the blue only is recognized, and the pink is by them referred to the blues. Hence an individual with a complete or total central colour-sectoma for red would, on viewing a pink disk, have the sectoma appear as a blue spot, surrounded by the pink, which is correctly perceived in the more peripheral parts of the fundus. A partial or incomplete central sectoma for red, would appear blue in proportion to the blending of the perception of red.

139 EAST 30TH ST., NEW YORK, N. Y.

ARTICLE XIV.

IS THE OVARIAN CELL PATHOGNOMONIC? By W. A. EDWARDS, M.D.,
of Philadelphia.

THE accurate diagnosis of ovarian tumour is of vital importance, as mistakes are by no means rare, even among our most skilful diagnosticians. For example, John Hunter diagnosticated an ovarian tumour, and tapped the woman, who a short time afterwards was delivered of a child showing the marks of the trocar on its shoulder.

Dr. Washington Atlee mentions a case of pregnancy mistaken for ovarian tumour; the woman was tapped, causing a miscarriage of twins. Mr. Spenceer Wells, with his great record in ovariectomy, is obliged to acknowledge twenty-nine mistakes. Of eighty-one cases in which the operation was attempted (*The Principles and Practice of Modern Surgery*, Robert Druitt) no tumour whatever was found in five, and in six others it was not ovarian.

The means of preventing these mistakes are well known, as : Inspection, palpation, percussion, auscultation, the spectroscope, the pulsations of the abdominal aorta (which, according to Dr. Walter F. Atlee,² are pathognomonic), chemical analysis, and the microscope. All methods but the last-named are so well known and tried, that it will not be necessary to discuss them here; it is to the latter, the microscope, that the profession has looked to save it from these embarrassing mistakes. The sac of the tumour presents nothing of a typical or diagnostic value, as the tumour is an epithelial epigenesis of the Graafian vesicle.

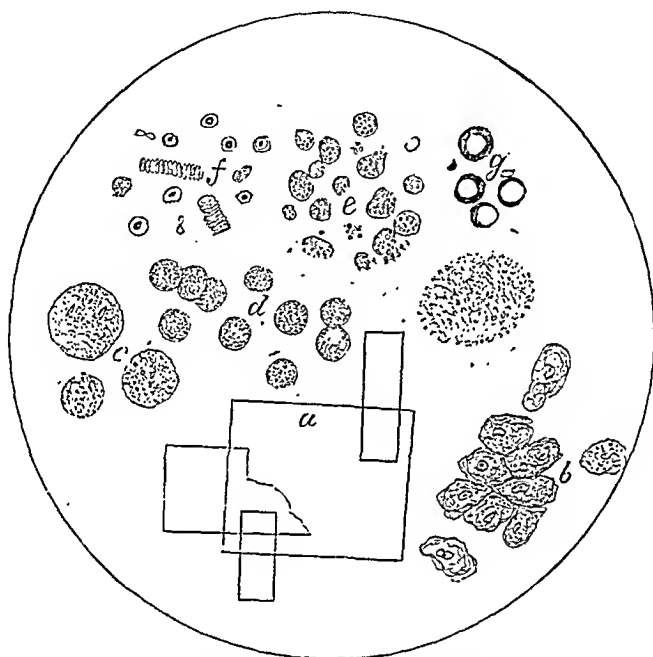
But the fluids of the ovarian tumours reveal abundance of cell forms, thought by many to be characteristic. These fluids, under the microscope,

¹ In the preparation of the accompanying paper, I have examined in all about three hundred fluids, both from the American and European hospitals, and from the practice of Dr. Walter F. Atlee, Prof. William Goodell, and the Pathological Laboratory of Dr. Henry F. Formad. The drawing was made under a power of about 480 diameters.

² Amer. Journal Med. Sciences.

often contain oil; blood-globules and plates of cholesterine are frequently seen; epithelial cells, isolated and collected in groups; pus, granular cells, varying in size, which are supposed by some to contain the material upon which the colour of the fluid depends, and a "free, delicate, granular cell" (ovarian cell), which its advocates affirm is characteristic of the ovarian fluid.

The accompanying drawing represents a characteristic ovarian fluid, taken from a patient by Dr. Walter F. Atlee, though it is rarely that I have seen one presenting all the features which are given in the figure.



a. Crystals of cholesterine. b. Epithelial cells. c. Gluge's inflammatory corpuscles. d. Pus-corpuscles. e. Ovarian cell. f. Red blood-corpuscles. g. Oil-globules.

It is (e) the ovarian cell that most concerns us. I regret to differ with Dr. Washington Atlee, Drysdale, and many other authorities, but my investigations with ovarian fluids lead me to conclude that the "free, delicate granular cell" is *not* characteristic of that fluid, as I have seen it in many fluids which were not ovarian, and have examined ovarian fluids in which it was absent.

In connection with these statements the following letters to Dr. Walter F. Atlee speak for themselves: Mallassez, of the College of France, writes that he often examined liquids to determine whether they were ascitic or cystic.

"Sometimes I have been able to affirm the existence of a cyst; but often, I must confess it, have I remained undetermined. When, in the liquid drawn off, we find epithelial cells clearly recognizable (cells caliciform, cells with vibrating

cilia, or simple cylindrical cells), we must admit that these elements proceed from the walls of the cavity that contains the liquid; in other words, that the cavity possesses epithelial lining. This is the case with ovarian cysts. We can thence conclude, that such a liquid is not a peritoneal liquid.

"In fact, in order that epithelial cells be found in a peritoneal liquid there must be communication between the peritoneum, as in some epithelial tumours, which would be revealed by clinical examination.

"When the abdominal liquid does not contain recognizable epithelial cells, but if it contains a notable proportion of granular bodies or crystals of cholesterine, there is still probability that there is an ovarian cyst. Several times I have made myself sure of this. When in the liquid exhibited only some white or red globules exist, the diagnosis appears to me to be very uncertain; such liquids can come just as well from a cyst as from ascites.

"So much for the microscopical examination; now for the chemical analysis. If it is even well established that paralbumen is only met with in ovarian cysts, but never in ascitic fluids, we would have then a very good diagnostic sign. Unhappily I am not able to give you personal information on this point. 20th August, 1878."

Charles Robin writes:—

"It is lost time to hunt with the microscope to distinguish the liquids of cysts of the ovary from the liquids of serous cysts. We must have recourse to chemical analysis. 17th December, 1876."

Dr. Peaslee, in his book (*Ovarian Tumours*, p. 118), says: "I have not been able to detect them [ovarian cell] in the fluid of all cysts known to be ovarian." Dr. Walter F. Atlee thinks, as he expresses it, "that there is no specific cell in ovarian fluids, just as we no longer look for the specific cancer cell in cancerous growths." Spiegelberg and Waldeyer make no mention of them. Mr. Nunn (Brown, *Ovarian Dropsy*, p. 47) does not attach much importance to them as a diagnostic guide. Dr. Braxton Hicks, of Guy's Hospital, and Dr. W. S. Playfair, of King's College Hospital, London, informed me that they placed no reliance whatever on the cell in diagnosis. The so-called "ovarian granular cell" may be described as follows:—

"The cell is usually round, but occasionally oval; it is very delicate, transparent, and contains a number of fine granules, but no nucleus. These granules have a well-defined outline, and glisten like so many particles of diamond dust. The cells themselves differ greatly in size, but the structure is always the same; they are seen as small as $\frac{1}{50000}$ of an inch, and as large as $\frac{1}{2000}$; in some fluids they are much larger, but they generally correspond in size to the pus-cell. The addition of acetic acid causes the granules to become more distinct, while the cell becomes more transparent. When ether is added, the granules become nearly transparent, but the appearance of the cell is not changed. The granular cell (ovarian cell) is distinguished from lymph, white blood-corpuscles, and other cells which it resembles, both by its appearance and its behaviour with acetic acid. The cell wall occasionally has a wrinkled or puckered appearance, and sometimes in the fresh state is seen a body resembling a nucleus; but with acetic acid it merely shows the granules more distinctly, and increases its transparency.

"Gluge's inflammatory corpuscle is larger and more opaque than the ovarian cell, and has the appearance of a collection of oil-globules. Occasionally it has a cell wall; others are wanting in this respect.

"I might add that a cell is sometimes seen in ascitic fluid, depending upon irritation of the peritoneum, which has been mistaken for the ovarian granular cell. In size and somewhat in appearance it resembles the pus-cell, but shows no nuclei on the addition of acetic acid. Their surface is generally granular, but occasionally appears finely wrinkled. It differs from the ovarian granular cell in that it is semi-opaque, and does not present the clearly defined granules of the ovarian cell. It is, as a rule, of a uniform size, $\frac{1}{2000}$ th of an inch in diameter. These cells, however, are not characteristic of the ascitic fluid."

Now if the above-described ovarian granular cell were as thoroughly characteristic as its supporters affirm, all doubt in the diagnosis of ovarian dropsy would be forever at rest; but every-day experience does not bear this out; as, for example, a case occurred in the practice of Dr. Walter F. Atlee, on May 7th, 1880, which presented absolutely diagnostic signs of ovarian dropsy, the fluid, upon microscopical examination, showed the most typical ovarian cells in large numbers, the fluid also gave evidence of containing paralbumen, with the well-known test for that substance; these, in conjunction with the other signs of minor importance to us as microscopists, determined the doctor to operate, which he did upon the above-given date. Upon opening the abdominal cavity by the usual method in these cases, *no tumour* whatever was found!

The following is as much of Dr. Atlee's history of the case as concerns our purpose, together with the microscopical report of Dr. Washington Baker, who examined the fluid:—

"Elizabeth Y., æt. 26, measures 47 inches around the waist, a magnificent specimen of health and strength, two months ago began to be unwell; tapped on May 6th, 1880. Fluid coagulable by heat; acetic acid added and boiled, it redissolved, paralbumen. Microscope showed epithelial cells, nuclei in abundance (so-called ovarian granular cell); blood-corpuscles; reaction alkaline."

Dr. Washington Baker's report, May 11th, 1880, states:—

"The fluid is of a greenish-yellow colour, frothing when shaken; deposits a slightly reddish-coloured sediment. Specific gravity 1018. Reaction alkaline; a trace of albumen. Under the microscope are seen epithelial cells, *granular* cells, blood-corpuscles, and granular matter. Coagulable by heat, nitric acid, and alcohol. Paralbumen and fibrinogen. Therefore the fluid under consideration *belongs* to the group of ovarian fluids."

"Upon operating May 7th, 1880, found no cyst, drew away a quantity of fluid, etc., sewed up, etc. etc. June 8th, tapped the patient, removed eleven pints, which, under the microscope, showed nothing but epithelial cells, blood-corpuscles, and granular matter. Specific gravity 1015. Reaction neutral." The woman at the present writing is perfectly healthy, having had no return of her trouble.

I made repeated, careful examinations of the fluid, all of which confirmed the above-given report. The appearance of the cells was such as is seen in the cut on page 429.

¹ Dr. Washington Atlee, Ovarian Tumours.

These ovarian cells acted with reagents precisely as the veritable ovarian cell of Drysdale should act. ("The granular cell found in ovarian fluid, by Thomas Drysdale, M.D.," *Transactions American Med. Assoc.*, 1873.) In fact they were in no way to be distinguished from the cells existing in a case in which the tumour is present, and yet, taken in connection with the presence of paralbumen, etc., how thoroughly did they lead Dr. Atlee astray! Dr. William Goodell has recently had a case of abdominal tumour, the fluid of which, on the first tapping, showed no ovarian cells; on subsequent tapplings the cells were seen in sparse numbers, but on operating, the tumour proved to be a typical ovarian cyst. The ovarian cell has been seen in the renal cyst and in the pleural cavity, but I have never had an opportunity of seeing it from those situations.

Dr. Hugh M. Taylor has published an article in the *Virginia Med. Monthly* for 1879, vol. vi. page 209, in which he describes the identity of the cells found in fluid from cystic tumours of the neck, scrotum, etc., with the so-called ovarian corpuscles or Drysdale cell.

I make the statement above that I did not consider the "free granular cell" as characteristic of the ovarian cyst; now the question comes up, what is the ovarian cell, and from whence does it arise, if it is not peculiar to, and owes not its origin to, the ovarian cyst?

In examining many fluids, etc., under the microscope, I have constantly met the pus-cell in various stages of degeneration, or in other words, undergoing the process, as I understand it, which would ultimately turn them out full-fledged ovarian cells. Some of the pus-cells would have one or two glistening granules or fine diamond-like points in them, others quite a number, and still others would be breaking up into the "free delicate granular cell" of Drysdale, and could be distinguished neither by the eye nor by reagents from the veritable ovarian cell of that authority and his followers.

In May, 1880, I examined a fluid in the Laboratory of the University of Pennsylvania, with Dr. Henry F. Formad, for Prof. D. Hayes Agnew, with the following result: "The dark fluid, upon microscopical examination, showed red and white blood-corpuscles, pus in stages of degeneration, a very few epithelial cells, and some crystals of triple phosphates." The fluid was drawn from a supposed malignant growth of the rectum, in the male, by a trocar. Some of these pus-cells exhibited but one or two glistening granules, others more, and quite a large majority could be called typical ovarian cells, as it was utterly impossible to distinguish them, either by the eye or reagents, from the ovarian cell found in fluids from the cyst.

If it be true that the ovarian cell is seen in fluids other than ovarian, and also if it be true that it is a degenerated pus-cell, can we not produce this cell artificially? Acting upon this thought, I procured four specimens of healthy, laudable pus: two from amputation stumps, arm and

leg, and two from abscesses. I kept these specimens, each in its own tightly corked bottle, for five weeks, as nearly at the temperature of the body as possible. At the expiration of this time I made microscopical examinations of them with the following result:—

In two I got the typical ovarian cell (amputation specimens), proved so by its appearance and its action with reagents. In the third (abscess of leg) the cell was imperfectly developed, some proving themselves true with reagents, others failing in this respect.

In the fourth and last the cells were not developed at all, either in appearance or reaction with tests; so that the result is: In 1st and 2d specimens, I got typical ovarian cells. In 3d, imperfectly developed. In 4th, entirely absent.

I may add that Dr. H. F. Formad informs me that he has performed the same experiment, using, however, only one specimen of pus, finding it, after the lapse of several weeks, crowded with "ovarian cells."

Let me now recapitulate the points which seem to me to have been proved in this article:—

1. The ovarian cell is not diagnostic of the ovarian tumour.
2. We may have a fluid from an ovarian tumour entirely devoid of the ovarian cell.
3. On the other hand, we may have an abdominal fluid which is not ovarian, presenting the cell in great abundance.
4. With the present state of our knowledge, the accurate microscopical diagnosis of ovarian dropsy is impossible; the most distinguished ovariotomists always make their first incision an exploratory one.

In the examination of the above-mentioned three hundred fluids, I have met the ovarian cell so frequently and have known it to be contained in an ovarian tumour, that, while I do not consider it pathognomonic at all, I still think it merits some weight in making our diagnosis of ovarian cystomata.

ARTICLE XV.

VAGINAL CYSTS. By T. NAYLOR BRADFELD, M.D., Surgeon to the Women's Hospital, Newark, New Jersey.

TUMOURS designated as vaginal cysts, and credited by the few writers making special mention of such growths as among the curiosities of general practice, have as yet received no settled opinion concerning their true pathology, nor have we, from the little known of their clinical history, been able to decide satisfactorily whether they originate as solid fibrous bodies, and pass by inflammatory changes to the fluid state, or are, with much greater probability, essentially cystic from their inception.

Among the more recent authorities consulted there are but four or five especially notable writers that have so much as referred to the existence of these tumours. The works of Drs. Emmet, Thomas, Goodell, Simpson, Klob, Tilt, Sims, Atthill, Savage, Hodge, Hewitt, and many other like works examined, in no way make the slightest mention of them, and while we were not a little surprised to read in Dr. Barnes's "Diseases of Women"¹ that "several clear examples have come under my observation," he further on speaks of these cysts as "certainly of rare occurrence," and after referring to the cases reported by Drs. West and Seanzoni, gives us in the following brief summary of facts about all there was written or probably known of their cause and pathology up to the date of his publication in 1878.

Dr. Barnes informs us that their origin is not clearly determined, and that "in some cases, possibly, they resemble fibro-cystic tumours of the uterus, the cystic element being specially developed. In others, according to Huguier, they originate in obstructed mucous follicles." Seanzoni, on the other hand, and with greater plausibility we believe, says that accurate information shows these growths always to have been developed in the peri-vaginal cellular tissue, and, according to Rokitsky, their primitive seat is outside the vagina, with which they have only a secondary relation.

From the rarity and uncertain acquaintance we have with the clinical history of these tumours, the report of a case still under observation will prove of interest.

The patient, Mrs. S., of German parentage, 28 years of age, seven years married, five children, no abortions. Enjoyed the very best of health until five or six months after the birth of her youngest child, now three years old. Five or six months following the birth of her last child, she began to suffer with almost constant backache, a profuse leucorrhœa, and what she calls "much bladder trouble;" micturition being sometimes difficult (retention) and painful, and always followed by a heavy bearing-down feeling about the pelvis, and a sense of scalding whenever near and during the menstrual period. She remembers these symptoms as among the earliest and more prominent to attract attention; the leucorrhœal discharge and accompanying irritation (*pruritus vulvæ*) causing the patient much local uneasiness and marked nervous disturbances.

She has always been free from menstrual trouble, and enjoyed perfect regularity of this function until four or five months ago, since which time there has been no return of the catamenia. Bowels constipated, and sometimes moved with pain and difficulty. Copulation has gradually grown so distressful to the patient and unsatisfactory to the husband that they have mutually abandoned the act.

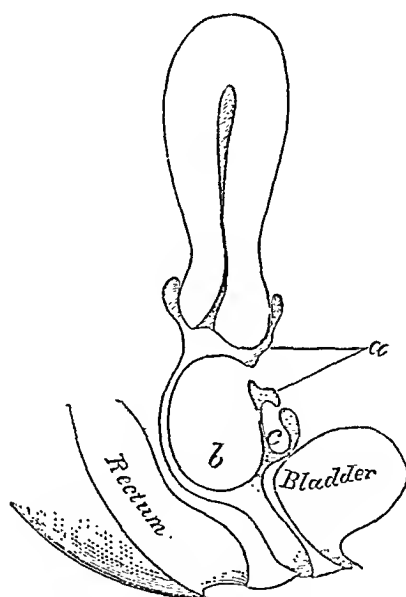
Mrs. S. informs me that her "family physician," in consultation with two other practitioners, had "carefully examined" her some three or four months before, and had then discovered what they supposed to be a fibrous

¹ A Clinical History of the Medical and Surgical Diseases of Women, by Robert Barnes, M.D., second American from the second London edition, pp. 759, 1878.

tumour of the uterus; the growth, as she says her physician told her, could be seen hanging from the mouth of the womb, and she was advised to avoid operative interference so long as it should not perceptibly affect the condition of her general health.

However, alarmed by the very sudden increase in the size of the abdomen, caused, as the patient fully believed, by a rapid and dangerous development of the tumour, she had now come to consult me with reference to its immediate removal, which, as she said, she preferred having done at almost any risk to life, rather than suffer the "anxiety of mind" which the growth of the tumour and its threatened danger continually gave her.

Attempting a digital exploration, the vagina was found obstructed by a rounded body fully as large as a good-sized hen's egg, and imparting to the touch an impression very much the same as that produced by any ordinary fibroid. However, by gently pressing the tumour aside, I was able to pass my finger behind and around the growth to a point *in front of* and a little above the os tincæ, the cervix proving to be free and unobstructed, and presenting the characteristic features of early pregnancy, while the tumour, as already stated, was found to have its point of attachment near the upper angle of the anterior vaginal wall, directly in front of and nearly opposite the os tincæ, or close to the left side of the urethral canal in front of the cervix uteri (figure, *a*), and in this position explaining, no doubt, the "bladder trouble" so long complained of by the patient.



The tumour presented a broad base of attachment, with a slight narrowing, or neck-like constriction, a half inch below its apparent seat of union—or what was first supposed to be its junction with the vaginal walls—but which proved to be its real connection (the constricted portion) with the vaginal mucous membrane. The broad triangular base, above proved to be a prolapsus of the vagina, and produced, no doubt, by the dragging weight of the tumour.

The abdominal enlargement complained of by the patient was satisfactorily explained by the existence of a three or four months' pregnancy, a

complication wholly unsuspected by Mrs. S., and thought of sufficient importance to make a consultation desirable. Accordingly, two of my professional associates at the Women's Hospital were invited to examine the patient, the growth being again diagnosed as a uterine fibroid, and its removal advised as an obstetrical or parturient necessity.

Seeing my patient a few days later, and examining more critically than I had yet done the precise form and consistence of the tumour, I discovered what appeared to me a hard, slightly movable, evenly rounded body underneath a thick and loosely investing sac membrane, and leading me to believe that a longitudinal incision through the sac wall would enable me to enucleate the fibrous body thought nestling within.

With this favourable view of the case, I prepared for operation by first placing the chain of a small éraseur around the neck or upper constricted part of the tumour, and dragging it toward the outlet of the vagina, penetrated its walls with an ordinary curved bistoury. No sooner had the first puncture been made than, to my surprise, there began oozing forth a thick viscous substance that at once reminded me of, and in appearance bore the *very closest* resemblance to, the white and gray (mixed) matter of the brain, which is sometimes seen in compound fractures of the skull.

When the tumour had thus emptied itself of two and a half or three ounces of this brain-like substance, and no longer obstructed the vaginal passage, a second and much smaller cyst was found growing from a point directly in front of, and a half inch below (nearer the outlet), the larger one (fig. 1 c), and which (in the original position of the two growths) was entirely hidden from view, and undiscovered by any one of the physicians previously examining the case.

Having settled the nature of the larger growth, I now more freely opened the smaller one, and thoroughly evacuating its contents, injected its cavity with Churehill's tincture of iodine, giving the larger cyst no further treatment than the puncture already made, and the daily injections of hot carbolized water and glycerine. Two weeks later the smaller cyst had almost or entirely disappeared, while the larger one had again filled, and was even more painful and troublesome than when first seen.

Again dragging it toward the vaginal outlet, I this time opened its sac wall, "from top to bottom," and after thoroughly removing its contents, treated its cavity with the same iodine injection used for the smaller growth, and with the same fortunate result of seeing it wholly disappear within three weeks or a month.

As to the seat of these tumours, there cannot, in the case above reported at least, be the slightest possible doubt that they originated underneath or in front of the vaginal mucous membrane, or, as Seanzoni suggests, in the peri-vaginal cellular tissue, and where, by fingers and probe, we were able to follow and unquestionably fix the seat of the larger cyst, when a second time relieved of its contents.

It was indeed the certainty with which we were able to trace the cyst to this origin (cellular), behind, or rather in front, or underneath the anterior vaginal wall, that prevented my following Dr. Lewis's¹ plan of inject-

¹ The Treatment of Hydrocele and Serous Cysts in General, by the Injection of Carbolic Acid. From the Transactions of the Medical Society of the State of Pennsylvania, 1851.

ing the cavity with carbolic acid, fearing (from what I had read in Dr. Reichert's paper on cases of carbolic acid poisoning) that the injection of this drug into such a cavity as the larger cyst presented, might possibly terminate disastrously for the patient.

I believe that these tumours were essentially cystic from their very inception. That they are of slow growth we have many reasons for believing; the patient in the present case having been conscious of their presence for nearly two years, while a patient I saw and examined, by invitation of Prof. Alex. Simpson, while attending the clinics of this distinguished gynaecologist, at the University Hospital of Edinburgh, in the summer of 1878, presented a cystic tumour near the junction of the cervix uteri with the vaginal wall (right side) that had existed there, the size of a hickory-nut, for a period of two or three years, and which, if I correctly remember, was diagnosed as non-puerperal, and to have its probable origin within the peri-cellular tissue; this and the case above reported being the only ones I remember ever to have seen.

106 HALSEY STREET, NEWARK, N. J.

February 13, 1882.

ARTICLE XVI.

A BANDAGE FOR THE TREATMENT OF VARICOCELE. By ROYAL WHITMAN, Surgical Interne at the Boston City Hospital.

THERE are many cases of varicocele where a radical operation would not be advised, for which the ordinary suspensory bandage is not sufficient to prevent the dragging sensations and neuralgic pains which are at times present in almost every case, caused by the constant pressure of the enlarged veins upon the testicle.

Besides the physical inconvenience, this affection is often the cause of considerable anxiety to the patients, who, when their attention has been once called to the affection, often attribute to it numerous other symptoms, real or imaginary. It will also be noticed that in these cases the testicle is almost invariably smaller on the affected side, though normally it is the larger of the two; showing a tendency to atrophy from constant pressure.

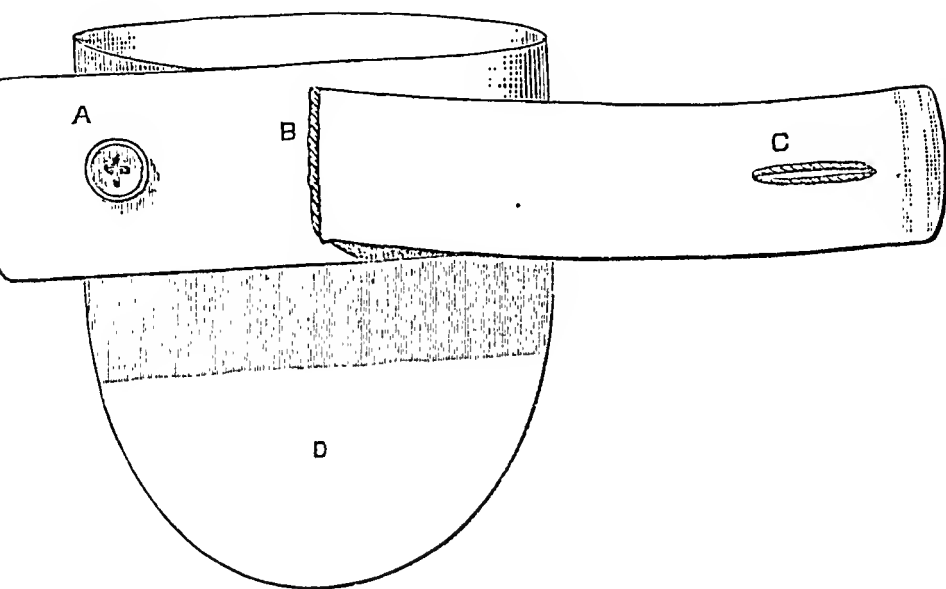
Numerous appliances have been devised for the treatment of this affection, but they are all more or less unsatisfactory; first, because patients object to wearing a surgical apparatus for what appears to be such a slight affection, and secondly, because the great majority of such appliances are

¹ American Journal of the Medical Sciences, October, 1881.

extremely uncomfortable. The trusses, which press upon the veins in the groin, would evidently aggravate the trouble by impeding the return of the venous blood.

Morgan's bandage, which straps the testicle up into the groin, answers its purpose very well; but it is hard to adjust, often uncomfortable, and exposes the testicle, from its position in the groin, to constant injury.

The following simple bandage has proved very satisfactory. Two layers of linen cloth, or other light material, between the layers of which a piece of thin rubber may be placed to prevent wrinkling, are stitched together, as in diagram, it being the actual size of an ordinary



bandage. The portion D is then placed behind the testicle on the affected side, the two ends of the bandage, A and C, are then brought about the scrotum above the testicle, the end C is then carried through the opening at B, and after again encircling the scrotum is buttoned at A. The portion D is then brought up and attached to the inside of the cross-band by an ordinary suspensory bandage, the bag of which is then placed over the scrotum and bandage in the ordinary manner, almost completely concealing the latter.

This bandage simply inverts the testicle, allowing the mass of veins which were pressing upon it to fall below, while the encircling bands, A and C, which are now below the testicle, keep up a steady pressure on the enlarged veins in a direction which does not impede the circulation, while the elevated position of the testicle favours the return of venous blood. This bandage will at once and completely relieve the uncom-

fortable sensations. It is easily applied, is comfortable, and costs almost nothing. It may be worn constantly, being applied in the morning before rising, in which case it will prevent any possible atrophy of the testicle, or it may be worn only when the uncomfortable sensations are present. Under its constant use the volume of the veins about the testicle soon becomes reduced, while the testicle increases in size.

ARTICLE XVII.

MULTIPLE POLYPOID FIBROMA OF THE NYPHÆ; A RARE CASE. By B. F. BAER, M.D., Demonstrator of Clinical Gynæcology, Instructor in Gynæcology in the Post-Graduate Course, and Chief of Dispensary for the Diseases of Women in the University of Penna.; Obstetrician to the State Hospital for Women, Philadelphia.

M. S., æt. 39, is married and has had four children, the youngest of whom is eleven years of age. Her labours were all tedious, one of them requiring the aid of the forceps. She has been in delicate health since her first gestation. Her menses have always been regular, but she has had a profuse leucorrhœa since the birth of her last child. Her father died at the age of sixty of "consumption of the bowels," and her mother at fifty of "dropsy," the character of which I was unable to ascertain. She herself had a severe pulmonary hemorrhage eighteen years ago, after the labour with her first child, and one year since a slight hæmoptysis for one or two days. At times she has a slight cough. No history of syphilitic infection could be obtained, nor were there any symptoms of constitutional syphilis present in the case.

About four years ago she first discovered at the upper portion of the nymphæ, on either side of the clitoris, two growths about the size and shape of a small mulberry. These grew separately until they had attained a length of about two inches, when they became adherent to one another at their distal extremities first, and finally throughout their entire length. Within a few months after the discovery of this condition, she noticed a number of smaller growths of a like character sprouting out along the line of the labia minora. As each of these younger vegetations reached sufficient development they, in like manner, became adherent to one another at their extremities, and finally joined the parent or main growth. This mass grew to almost its present size during the first two years of its existence, its growth being very slow in the last two. About one year ago she became aware that the vaginal orifice was becoming obstructed by similar vegetations, and later the anal orifice became likewise involved.

She now, for the first time, consulted a physician, Dr. W. A. Davis, of Camden, who kindly asked me to see the case with him. With the patient in the dorsal position, and the parts exposed, the following condition presented itself to view. The labia majora were widely separated by an unsightly, irregularly lobulated mass, which reached from the clitoris to the anus, spreading out and entirely concealing the vaginal orifice.

Each lobule had a very uneven, hob-nailed surface, and that, together with its dark colour, makes it very much resemble elephantiasis in the negro. The whole mass seemed to take its origin from the nymphæ, both of which were involved alike. The clitoris could not be found, and it was probably lost in the growth or destroyed by pressure. The different parts making up this structure were larger at their extremities than at their points of origin, thus giving each lobule a club-shaped appearance. Examination of the under surface of this growth proved its origin to be in the nymphæ, and that it had a number of pedicles (see fig.). Some



of these pedicles were adherent to one another along their entire length, while others were independent, the extremities only being attached to the main growth. In no instance was there an exerescence which was completely separate from the main growth, but in several the attachment was very slight. At a number of places there was an appearance as if the pedicle of a lobule had become attenuated by traction on it, and finally separating entirely, the clubbed extremity was left to derive a parasitic existence through its attachment to its fellow. The vaginal orifice, os urethræ, and anus were studded with growths of similar character. These were lighter in colour, and were not so firm on pressure as the remainder of the growth, due very probably to the fact that they were not exposed to the same extent. The skin occupying the coccygeal groove seemed to be undergoing a change in the same direction. The vagina, above the carunculæ myrtiliformes, was entirely free from the disease. The skin covering the labia majora was thickened, but there was nothing else to indicate that it was likely to take part in this vegetating growth. These products were firm and elastic, but not hard. They were tender on pressure, though they had given rise to little or no pain during their development, when left alone. They did not appear to be very vascular, and at no time in their history did they bleed or ulcerate, but they were constantly moistened by a thin, fetid secretion from the surface.

The great inconvenience and suffering arising from this condition was

interference with the functions of the parts involved, and for this mainly she sought relief. Surgical interference was advised, and on Feb. 23, 1881, with the patient anæsthetized, I proceeded to operate, being assisted by Drs. W. A. Davis, Wm. D. Robinson, and John S. Mabon. My purpose was to amputate the mass at its different points of attachment by a sort of flap operation, and then to bring the edges together by suture, and thus aim to get immediate union. But when I had removed the nymphæ at their lower portions, and had advanced upwards towards the clitoris, so much hemorrhage was met with that it was considered more prudent to finish the operation with the aid of the *écraseur*, which was done. After the mass was separated no hemorrhage occurred, though there was left a raw surface along the whole length of each nymphæ about half an inch in width, and a much larger surface at their junction above. The edges of the wound were brought together, as originally intended, by sutures, about twelve of which were required. I did not now, however, expect to secure union by first intention, for two reasons: first, because of the use of the *écraseur*; and second, because the skin was so tense that the ligature cut through in several instances, when effort was made to bring the edges together, although very little force was required to do so. The knees were fastened together, and a suppository containing one grain of the aqueous extract of opium placed in the rectum, which was all the opium administered in the after-treatment of the case.

The pedicle, as seen in the specimen, gives a very inadequate idea of the real surface left to heal, as it did not spread out when released from the loop of the *écraseur*, as did the parts from which it was taken.

The after-treatment consisted in antiseptic precautions, good food, and quinia in tonic doses. On the fourth day, it was found that the sutures had cut out, and that union had, as feared, failed to take place. The wound finally healed by granulation, and the patient recovered better health than she had enjoyed for years; and in five months after the operation she became again pregnant, the last pregnancy having occurred eleven years before.

My friend Dr. H. F. Formad, to whom I sent the tumour for microscopic examination, gave me the following report: "The specimen must be classed with the *polypoid fibromata*, known also under the name of *fibroma molluscum*. It is made up exclusively of connective tissue in all its parts, and is covered all around by a thin membrane which has the structure of skin (minus the secretory elements and hairs). It has nothing in common with *papilloma* or with *elephantiasis*, except in macroscopic appearance, and differs from the latter by being pedicellated and containing no yellow elastic tissue. Under the microscope, the absence of yellow elastic tissue forms one of the main diagnostic points of fibroma from elephantiasis."

The only cases that I have been able to find recorded which somewhat resemble this specimen in shape and character are, first, that given and pictured by Virchow in his book on tumours (*Die Krankhaften Geschwülste*, vol. i. p. 421), and that by Dr. H. F. Formad (*Trans. Path. Society of Phila.*, 1880). But in both of these cases the tumours did not exceed in size a small hen's-egg, and they were attached to the labium minorum by only one narrow pedicle, whilst in my case the tumour was attached by many pedicles to both labia minora. In both cases the

tumours differed histologically from this specimen in being of myxomatous structure, whereas in my case the tumour showed a purely fibrous structure.

Another class of tumours, which have a certain macroscopic resemblance to the new formation in question are described by Virchow, l. c. p. 345, and termed "*acuminated condylomata*." These occasionally also occur in polypoid, dendritic form, but differ in being in the main bulk made up of epithelium.

Elephantiasis arabum, which sometimes gives rise to tuberosities, the surface appearance of which is not unlike that of this tumour, according to Virchow, never gives rise to pedicellated formations, but always involves an organ in toto.

ARTICLE XVIII.

ON THE VARIETIES, MECHANISM, DIAGNOSTIC SIGNIFICANCE, ETC. OF THE MITRAL PRESYSTOLIC CARDIAC MURMUR. By AUSTIN FLINT, M.D., Professor of the Principles and Practice of Medicine and of Clinical Medicine in the Bellevue Hospital Medical College.

My object in this article is to give a brief statement of conclusions, based on my own clinical observations, in respect to the mitral direct or presystolic cardiac murmur, and the points which I shall make are embraced in the following propositions:—

1. There are two varieties of this murmur, which are distinguished by differences in quality and in mechanism. One variety is a rough, and the other is a soft murmur.

2. The roughness in the first of these varieties is characteristic, and may be distinguished as vibratory or blubbery. It is imitated very closely by producing with the expired breath sonorous vibrations of the lips or of the tongue. The softness of the second variety is bellows-like, resembling that of other soft cardiac murmurs. This murmur may vary in pitch and intensity, but as a rule, it is low and weak.

3. The rough murmur is due to vibrations of the curtains of the mitral valve, caused by the passage of blood from the auricle to the ventricle. Hence, the modes just mentioned, of imitating the murmur, exemplify its mechanism as well as its vibratory or blubbery character. The soft murmur, like other bellows murmurs, may be due either to contraction of the orifice through which the blood passes, or to roughness of the surface over which it flows.

4. A rough presystolic murmur, in general, denotes a mitral obstructive lesion, the obstruction due to adhesion of the mitral curtains, leaving a

contracted orifice, the curtains remaining flexible. A presystolic soft murmur denotes either a contracted orifice or roughness of the endocardial membrane.

5. A rough presystolic murmur, exceptionally, is produced when there is no mitral lesion, aortic regurgitation existing whenever the murmur is thus produced. The production of this murmur without mitral lesion may be explained by the physical conditions incident to aortic regurgitation, taken in connection with the mechanism of the murmur.

6. A rough mitral presystolic murmur is not always present in connection with contraction of the mitral orifice, and by reference to the physical conditions, together with the mechanism of the murmur, its absence in certain cases may be satisfactorily explained.

7. A soft mitral presystolic murmur is a very rare physical sign. A rough mitral presystolic murmur, on the other hand, is by no means rare, although less frequent in its occurrence than the mitral systolic, the aortic direct and the aortic regurgitant murmurs. The explanation of the supposed infrequency of the rough presystolic murmur is to be found in the fact that it is often confounded with the mitral systolic murmur.

8. Mitral lesion giving rise to presystolic murmur is sometimes tolerated for a much longer period than appears to be generally supposed.

The mitral presystolic murmur was first distinctly separated from other cardiac murmurs, and its diagnostic characters clearly pointed out, by Fauvel, in 1843.¹ He described the rough variety, applying to it the terms *bruit de râpe* and *enroué*, and established its connection with a mitral obstructive lesion. Markham and Walshe appear to have been the first in England to recognize this murmur, but its distinctive characteristics were subsequently more clearly set forth by Gairdner. Skoda, up to the time of the fourth edition of his work (1850), evidently had no definite idea of it.

I was led to seek for the murmur by the study of the work by Walshe on *Diseases of the Lungs and Heart*, edition of 1854. Walshe describes in that edition of his work only the soft murmur. At the time of the publication of the first edition of my work on *Diseases of the Heart* (1859), I had met with examples of the soft murmur. The rough murmur, I confounded, as I had done previously, with the mitral regurgitant murmur; hence, I stated that the mitral presystolic murmur was soft and extremely infrequent in its occurrence. In an article contained in the *American Journal of the Medical Sciences* for 1862, entitled the Cardiac Murmurs, I corrected the account of the mitral presystolic murmur as given in the first edition of my work on *Diseases of the Heart*. I had then

¹ Archives Générales de Médecine, 1843, *vide* Hayden on Diseases of the Heart and Aorta, 1875.

recognized the common variety of this murmur, that is, the rough, vibratory or blubbery variety. Already many examples had come under my observation, and in illustration of its frequency, I stated in the article that while I was writing it there were six examples in Bellevue Hospital, and other examples in the Charity Hospital on Blackwell's Island. From 1858, when I began to give practical lessons in auscultation and percussion, up to the present time, I have been accustomed to demonstrate this murmur to medical classes, and it is not an exaggeration to say that many hundreds of examples have come under my observation during this period in hospital and private practice. Prior to my publications just referred to, so far as I know, no writer in this country had described this murmur. I believe that I may add that for many years after those publications it was recognized as a distinct murmur by very few of those who gave more or less attention to auscultation, and, indeed, at the present time, it is not so recognized by many.

An essential condition, of course, for the acceptance of conclusions given in this article, is freedom from any suspicion of error in the clinical observations on which they are based. With a clear apprehension of the points involved in the diagnosis of the rough mitral presystolic murmur, and proper care of observation, there can be no liability to error. As already intimated, the murmur with which this is often confounded is the mitral systolic or regurgitant. The fact that this error is committed does not arise from any difficulty in the discrimination, but from the lack of either a clear apprehension of the distinctive points, or of proper care of observation. Both varieties of the presystolic murmur end when the mitral systolic murmur begins, that is, with the first sound of the heart. Now, the mitral systolic murmur is never heard before the first sound of the heart, and the mitral presystolic is never continued after this sound. Attention to this point alone is sufficient to prevent the latter from being confounded with the former. If, as is often the case, but by no means constantly, there be present both the mitral systolic and presystolic murmur, the combination assists in the recognition of the latter provided attention be given to the point just stated. The first sound, and, of course also, the apex beat and the carotid pulse, occur between the two murmurs, marking the end of the one and the beginning of the other. If the presystolic murmur be rough and the systolic be soft, this difference in quality shows the presence of the two murmurs. Other points distinctive of the rough presystolic murmur are its vibratory or blubbery character, and its being limited to a circumscribed space in the situation of the apex beat. It is rarely weak, and often notably loud. Its loudness has been considered as proof that it could not be produced by an auricular contraction; but it is not difficult to understand why it should be loud when the true mechanism is considered. Another point is that the intensity of the murmur increases up to its ending with the first sound of the heart. The suddenness of its

ending is still another point. This is easily understood when it is considered that the auriculo-ventricular current of blood which gives rise to the murmur, is instantly and forcibly arrested by the ventricular systole.

There is an appreciable interval of time between the second sound of the heart and the presystolic murmur. By this fact the murmur may always be differentiated from an aortic regurgitant murmur. It is with the latter that a soft presystolic murmur may be confounded, if the differential points be not clearly apprehended. The limitation of the soft presystolic murmur to the region of the apex, and its absence at the base of the heart, are additional points which should prevent this error.

No other cardiac murmur has the same relations to the heart-sounds as those of the presystolic murmur, and rarely, if ever, has any other murmur that peculiar vibratory or blubbery quality which characterizes the rough presystolic murmur. Taking these facts, together with the other distinctive points, into consideration, I may assert with positiveness that, as regards the examples which have served as the basis of the conclusions given in this article, there could have been no error in the clinical observations. It may be said with truth that when its distinctive points have been fully understood and verified by examples, no one of the cardiac murmurs is more readily recognized than the mitral presystolic murmur. It will be observed that in the foregoing description there is no reference to the pitch and quality of the soft presystolic murmur. The characters, in these regards, are of no practical importance in the recognition of the murmur. It is to be discriminated from a mitral systolic murmur on the one hand, and an aortic regurgitant murmur on the other hand, by the differential points which have been stated, and these are sufficient for that purpose.

That the rough presystolic murmur is due to vibrations of the mitral curtains was stated in my article on the Cardiac Murmurs in 1862. I am not aware that this explanation of the mechanism had been given by any writer prior to that time, and it has neither been disproved nor adopted by subsequent medical writers. That it is the true explanation, as it seems to me, may be demonstratively shown. This would be of no great practical importance were it not that the explanation has a direct bearing on the diagnosis of the particular form of mitral lesion which it generally denotes.

The character of the rough murmur and the manner in which it may be imitated, as already stated, go to sustain my explanation of its mechanism. But conclusive proof is obtained by comparing the lesions, as found after death, when this murmur had been noted, with those in the cases (to be presently noticed) in which the murmur had been absent. With an exception, to be presently considered, there is mitral obstruction; but the obstruction is caused by adherence of the mitral curtains at their sides, forming what has been called the button-hole contraction, the curtains not

much contracted nor made rigid by thickening or calcification. Under these circumstances the mitral curtains form a funnel-shaped pouch within the ventricular cavity. When this pouch is distended by a liquid injected into the auricle, it is apparent that the passage of the liquid through the button-hole orifice into the ventricle causes in the flexible curtains sonorous vibrations. The mechanism may be illustrated with a healthy heart, by stitching together the mitral curtains, leaving a contracted aperture, and injecting a liquid into the auricle. The curtains in this experiment may be seen to vibrate, and a sound is produced analogous to the rough presystolic murmur. This experiment was recently made, by my request and in my presence, by Dr. W. C. Stone, house physician of the medical division of Bellevue Hospital, with which I am connected. The explanation which has been given of the mechanism renders intelligible the peculiar character of the rough presystolic murmur. That the murmur may be notably loud, notwithstanding the weakness of the contraction of the auricle as compared with the force of the ventricular systole, is not strange when it is considered how loud may be the sound produced by vibrations of the tongue or the lips with a feeble current of air in expiration. The mechanism accounts for the apparent incongruity when, as is not infrequently the case, a feeble mitral systolic murmur is associated with a notably intense presystolic murmur.

It follows, from what has been stated, that on the presence of a rough presystolic murmur may be generally based the conclusion that there exists the so-called button-hole contraction of the mitral orifice, the mitral curtains not having lost their flexibility from either contraction, thickening, or calcification.

A well-marked, rough mitral presystolic murmur may be present, and not be due to any mitral lesion. I am not aware of this clinical fact having been stated by any other medical writer. It was stated in my article on the Cardiac Murmurs in 1862, and I have reiterated it in subsequent writings. In the article just referred to, I gave a synopsis of the history of two cases in which the presystolic murmur was noted during life, and no lesion at the mitral orifice sufficient to account for the murmur found after death. I have met with several instances since that time. In all there existed aortic lesions which occasioned free regurgitation. There could have been no error of observation in these cases, and hence the only matter of inquiry relates to the explanation. The explanation which I gave in 1862 seems to me satisfactory, and I cannot conceive of any other. It is based on the true mechanism of the murmur when connected with mitral lesions, and on certain physical conditions which are incident to aortic regurgitation. I quote, from my article in 1862, the explanation, as follows:—

“The explanation involves a point connected with the physiological action of the auriculo-ventricular valves. Experiments show that, when the ventricles

are filled with a liquid, the valvular curtains are floated away from the inner ventricular walls, approximating to each other, and tending to closure of the auricular orifice. In fact, as first shown by Baumgarten and Hamerich, of Germany, a forcible injection of liquid into the left ventricle through the auricular opening will cause complete closure of this opening by the coaptation of the mitral curtains, so that these authors contend that the natural closing of the auriculo-ventricular orifices is effected, not by the contraction of the ventricles, but by the forcible current of blood propelled into the ventricles by the auricles. However this may be, that the mitral curtains are floated out and brought into apposition to each other by simply distending the ventricular cavity with liquid, is a fact sufficiently established and easily verified. Now, in cases of considerable aortic insufficiency, the left ventricle is rapidly filled with blood flowing back from the aorta, as well as from the auricle, before the auricular contraction takes place. The distension of the ventricle is such that the mitral curtains are brought into coaptation, and, when the auricle contracts, the current of blood through the auriculo-ventricular orifice passing between the curtains throws them into vibration, and gives rise to the characteristic blubbery murmur. The physical condition is in effect analogous to contraction of the mitral orifice from an adhesion of the curtains at their sides, the latter condition, as clinical observation abundantly proves, giving rise to a mitral presystolic murmur of a similar character. A mitral presystolic murmur thus may occur without any mitral lesions, provided there be aortic lesions involving considerable aortic regurgitation. This murmur by no means accompanies aortic regurgitation as a rule. The circumstances which are required to develop the presystolic murmur, in addition to the aortic regurgitation, remains to be ascertained. Probably enlargement of the left ventricle is one condition. The practical conclusion is that a presystolic murmur, in a case presenting an aortic regurgitant murmur with cardiac enlargement, is not positive proof of the existence of mitral lesion."

It is to be added that, in cases presenting a mitral presystolic murmur without mitral lesion, the murmur is variable as regards its presence and absence. This is to be regarded as a diagnostic point.

Hayden objects to the foregoing explanation of the presystolic murmur occurring without mitral lesion, on the ground that, if this explanation were the correct one, the murmur should be present in the "normal state of the chambers and valves." In this objection he overlooks the fact that in the normal state, although the valvular curtains are approximated at the time when the auricle contracts, they are not in coaptation as they are when, in addition to the passive flow of blood from the auricle prior to the auricular contraction, the ventricle has received the backward flow of blood from the aorta. The production of the murmur probably requires that the quantity of blood in the ventricle shall be sufficient to have produced closure of the orifice at the time when the auricle contracts. A stronger objection than that stated by Hayden, is the infrequency of the murmur in so many cases of aortic regurgitation.

It is by no means true that a rough mitral presystolic murmur is present whenever an obstructive mitral lesion exists. A mitral obstructive lesion may be found after death, when a mitral presystolic murmur had not been produced. This fact in no wise militates against the significance of the murmur when it is present. It is, however, an important fact as leading to the conclusion that we cannot exclude a mitral obstructive

lesion because the murmur is absent. The fact is a point in evidence of the correctness of the explanation which has been given of the mitral presystolic murmur. When the murmur is absent, mitral obstruction existing, the latter is due to contracted, thickened, or calcified valves. The curtains are incapable of vibrations sufficient to produce the murmur. Under these circumstances, there may or may not be a soft presystolic murmur. Clinical observation shows, as stated already, that this variety is extremely rare, and therefore its absence is no evidence of the absence of mitral obstruction.

The following case which came recently under my observation, at Bellevue Hospital, serves to illustrate the fact that much mitral obstruction may exist without a presystolic murmur, and also the explanation of this fact:—

The patient entered hospital with anasarca and notable dyspnoea. There was ascites out of proportion to the general dropsy. He had a loud, rough systolic murmur at the apex, transmitted to the left, and heard at the lower angle of the scapula. There was no mitral presystolic murmur. He had a systolic murmur at the base and transmitted to the carotids. The heart was considerably enlarged, and the signs denoted that hypertrophy predominated. The autopsy showed peritonitis, which was the immediate cause of death, hypertrophic enlargement of the heart, and universal old pericardial adhesions. The mitral orifice was diminished so as hardly to admit the end of the little finger. The mitral curtains were contracted and completely rigid from calcification. The orifice from the auricular aspect was smooth.

In this case the physical conditions were such that a rough presystolic murmur was impossible. Accepting the explanation which I have given of the mechanism, it might be supposed that the conditions were favourable for the production of a soft presystolic murmur, but it is to be considered that this variety is very rarely present in cases of mitral obstruction. Probably its infrequency is to be explained by the weakness of the contraction of the auricle as compared with the ventricular contraction. When present, according to this explanation, it denotes either unusual force of the auriculo-ventricular blood current, due to hypertrophy of the muscular elements in the auricle, or to physical conditions, pertaining to the contracted orifice, which are peculiarly favourable for the production of sonorous vibrations of the current.

A rough presystolic murmur may represent a degree of mitral obstruction which is tolerated for many years. As illustrations, I will refer to a few cases.

A patient whom I see occasionally came under my observation about twelve years ago, after her confinement. She had much anasarca, with large pleuritic effusion in both sides, and orthopnoea. She was speedily relieved, and during much of the time which has since elapsed, she has had comfortable health; she has repeatedly had more or less anasarca, which has yielded to digitalis and a saline diuretic. A loud presystolic

murmur has existed during this period. Probably the mitral lesion had existed for years before she came under my observation.

In another case the patient, a young girl, came under my observation fifteen years ago. She had then, and has always had since, a loud mitral presystolic murmur. The heart is but slightly enlarged, and the mitral lesion occasions inconvenience only on very active exercise. She has not had anasarca nor œdema, and there have not been any symptoms pertaining to the heart which have called for treatment.

In another case the patient was under my observation for more than ten years. The previous history showed that there had existed a cardiac affection for several years. There was a loud presystolic murmur. The affection was well tolerated up to a few months before her death. In this case, shortly after the occurrence of œdema of the lower limbs and dyspnoea, the presystolic murmur at times was not discoverable. This is probably to be explained by the weakness of the auricular contractions, and, under such circumstances, so far from its disappearance being of good omen, the reverse is true.

To these cases I could add others illustrative of the long tolerance of a mitral obstructive lesion. The existence of mitral obstruction with but little or no mitral regurgitation, and the absence of aortic lesions, conduce to the toleration.

ARTICLE XIX.

A CASE OF CÆSAREAN SECTION. BY GEORGE McCLELLAN, M.D.,
Surgeon to the Philadelphia Hospital, etc.

DURING the summer of 1881, I was unexpectedly called upon to perform Cæsarean section at Bar Harbour, Maine, on an Indian woman, in a poor little canvas tent, by lamplight. It was on the evening of August 20th, at half past ten o'clock, in the presence of Dr. Keating, Dr. Amory, Dr. Rogers, and Dr. Chilcothe. The woman, whose name was Susan Antoine, aged 38, was the mother of seven other children. She had always had difficult labours, but was only attended by a midwife, who was a member of the tribe to which she belonged. She was one of the Canadian Indian basket-makers, who encamp on the island of Mt. Desert during the summer season. She had been in labour forty-eight hours. The physician who first saw her said he had "applied the forceps and attempted version;" but not succeeding in delivering the child he called in Dr. Robert Amory, of Boston, who found a foot presenting in the vagina, but could not determine satisfactorily the position of the child. After several hours of traction on the foot, without changing the condition, I was sent for, and wishing to have the advice and experience of Dr. William V. Keating, who happened to be in the neighbourhood, I asked him to see the case also. As his opinion of the woman's condition, from a gynaecological point of view, is very valuable, I will add, after giving my own

account of the operation, a note which he has sent me expressing his views of the case.

When we first saw the patient together, the cervix uteri was completely dilated, and the contractions were very strong. The *right* foot was found at the upper portion of the vagina with its heel directed backwards and to the right side. It was conjectured that the head, with an arm and leg, was engaged in the superior strait. The patient was put completely under the influence of chloroform, and traction was made upon the protruding foot, but without avail, although a fillet was applied, and great force used. No change could be made in the position of the child, either by efforts from within, or applied from without over the abdominal walls. Dr. Keating pronounced that the foetal heart had stopped, and that the presentation was a complicated one, resembling the fourth position of the vertex described by Hodge. After repeated and ineffectual attempts to dislodge the head of the child and to bring down both feet, it was decided that Cesarean section was the only means of saving the woman's life, as craniotomy was not thought practicable under the circumstances. It was, however, agreed to give a hypodermic injection of $\frac{1}{2}$ grain of sulphate of morphia, and to wait a couple of hours to see if nature's efforts would bring about any change. Upon returning, we found the presentation just as before, and it was decided that it was useless to delay the operation.

The patient was etherized by Dr. Chileothe. On a rude table covered with an old mattress and deer hides, and with only the light of two oil lamps, I began the operation. I first cut through the integuments and fat in the linea alba, from the umbilicus to the symphysis pubis, making one free incision; I then carefully laid open layer upon layer of fascia upon a grooved director, and after dividing the abdominal muscles, which were greatly wasted, opened the peritoneum (cutting sideways, as in opening the sac of a hernia), pushed aside the omentum and intestines, and immediately opened the uterus, coming at once upon the child.

The appearance of the distended uterus was very different from what I expected. It was glistening, and looked like elastic fibrous tissue, and the venous sinuses were not at all marked. The situation of the placenta was conjectured to be on the left side and back, and a bold incision was made into the uterus at a point corresponding to about two inches above the pubic symphysis. At first I was startled by a flow of what looked like fecal matter from the bowel, and for the instant was vexed that I had discarded the grooved director, but feeling assured that the uterus must be before me, I enlarged the incision, and at once discovered that I was in contact with the child, and that it was the meconium which had embarrassed me. Perhaps the bad light which I had to see by (for the lamp was held by an assistant whose eagerness to witness the procedure more than once cast a shadow over the wound) caused the momentary doubt; but I believe it was shared by all who were with me.

The walls of the uterus were very thin, and readily yielded to my finger. The child was immediately seized, and with Dr. Keating's assistance carefully, although with great difficulty, extracted. It was found to be very large, with an enormous head, which, with an arm and the left leg, was firmly wedged at the right sacro-iliac symphysis. The placenta offered no resistance, and was speedily detached. Carbolyzed sponges were used during the operation, and to mop out the effusion into the pelvis. As the womb contracted promptly, I did not put in any stitches, and without delay proceeded to unite the edges of the abdominal wound, taking deep

stitches with strong silver wire through the several layers, including the peritoneum. A carbolized flannel bandage was applied. I did not have to apply a single ligature. The operation took about half an hour. The patient had had a subcutaneous injection of $\frac{1}{2}$ grain of morphia two hours before the operation, and this was repeated immediately afterwards. Pulse remained good during the operation, and for some time into the night the patient slept peacefully. At eight o'clock next morning, she was restless, and complained to me of being hungry; wanted "beefsteak," and to "sit up;" no vomiting. Temperature normal; pulse 90. Ordered her kept quiet, and a little milk and lime-water to be given occasionally. No after-pains; womb firmly contracted; very little tympanites; wound looked very well, and discharges were natural. Flannel bandage (carbolized) reapplied. At 11 $\frac{1}{2}$ A. M., the doctors met me in consultation. The pulse was found to be 120; temp. 102°. Patient very restless. Wound looked well, and as before. It was afterwards ascertained that some one of her companions had given her during the interval of my visits over a pint of gin, believing that she would starve upon milk and lime-water, and *gin* being to the Indian a panacea for all ills. She asked Dr. Keating to give her some more "gin," and said she was hungry. Morphia was repeated, and a trained nurse obtained to watch her. During the day she complained of hunger more than thirst, and continued to be restless. Took eagerly all that was given her. She had no vomiting. Pulse ran up higher and higher, and the temperature kept pace with it. She was enormously fat, and was oppressed in the position on her back, and wished to turn over on the side. This was, of course, denied; but, being strong, as well as strong-willed, she got the better of the nurse, and turned over on the right side. The oozing was slightly increased, but the wound showed no tendency to gap, and there was no indication of hemorrhage. Pulse 130, and temp. 103°. At 5 P. M., she took milk greedily; voice strong. She said she had no pain, and the wound looked very well; countenance was bad. The morphia was continued to quiet restlessness. The heart was weak from the first, and there was every indication of fatty degeneration. At 9 P. M., after asking for water in a strong voice, and without any symptom of immediate dissolution, she died. No post-mortem could be obtained.

The child weighed over 15 lbs. The biparietal diameter was 4 $\frac{1}{4}$ inches. The circumference of the head measured 12 $\frac{1}{2}$ inches. It had the appearance of a four months' old baby.

I have received the following statement from Dr. Keating in reference to the case:—

In reply to your favour of 11th ult., I would state that when called in consultation upon the case of Susan Antoine, who had then, as I was informed, been in active labour for nearly forty-eight hours, I found the head engaged in the superior strait presenting vertex to the right sacro-iliac symphysis, fourth position of vertex, according to Hodge, an arm, and I thought the left foot engaged with the head; the right leg was protruding. The forceps and version by the feet had been repeatedly tried previous to my visit. The patient's pulse was rapid, and the heart, a fatty one, very weak. I requested that the patient should be thoroughly anesthetized, and whilst in that condition I then endeavoured by traction

on the right leg, combined with external manipulation over the abdomen, to bring down the breech. After repeated attempts, finding nothing could be accomplished, we decided to administer $\frac{1}{2}$ grain sulph. morphia hypodermically, and wait for two hours for the efforts of nature. Returning at 9 P. M., we found the patient in the active throes of labour, with no change in the presentation. After renewed useless efforts to effect version, and finding nothing could be accomplished, we held a consultation as to our next proceeding. The condition of the uterus and surrounding pelvic tissues was the most unfavourable I have ever met with. The protracted active throes of labour, the continued applications of the forceps, and the repeated attempts to effect version, had produced such a tumefaction of the tissues, that it was with much difficulty, at my last visit, that I could identify a cephalic presentation. Moreover, the anterior lip of the uterus projected in a slinglike condition under the symphysis pubis, so suggillated and tumefied that it might have been mistaken for the placenta, almost occluding the os uteri. Upon my first visit, I had diagnosed from the condition of the fœtal cord, which was jammed in the presentation, the death of the fœtus, which was confirmed by all of us in a subsequent auscultation of the heart; no pulsation being audible. Our consultation then did not include the question of preserving the fœtus; it simply resolved itself, as to the selection of the means which, under the circumstances, would afford the most speedy delivery with the least risk to the mother. Viewing the conditions of the presentation, occipito-posterior, with an arm and foot jammed in, the intense tumefaction of the tissues in the pelvis, the enormous suggillation of the anterior lip of the uterus, almost occluding the os uteri, the character of the instruments at hand to perform craniotomy, and our adverse surroundings, Cæsarcan section was immediately decided upon, as affording the poor sufferer the safest and speediest means of recovery. The more recent successful results from this operation, with the advantages for a speedy recovery to be expected from the remarkably pure and genial climate of Bar Harbour, compelled us to the above conclusion. The subsequent delivery convinced us of the correctness of our decision, as the head was found presenting in the fourth vertex position, with an arm and foot included, and the condition of the soft parts such as to have positively impeded the proper introduction of the instruments required for the successful performance of craniotomy, with the subsequent delivery of the fœtal head. You will readily recall to mind the length of time and the powerful efforts required to remove the head from the pelvis after the operation. I think I but echo the sentiments of my respected colleagues, in stating that the operation was entirely successful, even under the inauspicious circumstances under which it was performed. On the following morning the poor sufferer's condition was as favourable as possible, as to pulse, temperature, and condition of the wound. I am convinced that the fatal issue was mainly due to the excessive amount of stimuli given in our absence, her fatal symptoms all pointing to an exhausted heart.

ARTICLE XX.

CASE OF MASTOID ABSCESS WHICH RUPTURED INTO THE LATERAL SINUS.
DEATH FROM PYÆMIA. By D. W. PRENTISS, A.M., M.D., Professor of
Materia Medica and Therapeutics in the National Medical College, Washing-
ton, D. C.

CHAS. H., aged 31 years, upholsterer; father and one brother died of
consumption. One sister has cancer. Has always been a strong, hard-
working man; has had a chronic inflammation of the middle ear, fre-
quently causing intense pain, and a purulent discharge from the ear. In
the spring of 1881 he had a violent pharyngitis accompanied by severe
pain in the right side of the head. Had at various times been under
medical treatment for the ear trouble—the last occasion being in the
hands of an irregular specialist.

During the early part of November, 1881, suffered from earache and
headache on the right side, but continued working until Nov. 10th.

Nov. 11th. Chill at 11 P. M., followed by high fever.

12th. Chill at 4 A. M. Fever and sweat. A physician was called in
who ordered quinia in full doses.

13th. Chill at 5 A. M.

14th. No chill. Violent earache right side.

15th (5th day). Chill at 1 P. M. Fever and earache.

First saw the patient at 2 P. M. Pain in right side of head intense,
extending more to the frontal and temporal region than behind the ear.

The following is a brief summary of the daily record of the case:—

From 5th to 10th day no chill.

10th day. Pulse 144 during chill. Dextro-quinine 2.00 grams.

11th day. Dextro-quinine 2.00 grams.

12th day. Quin. sulph. 2.00 grams. Chill at 5 P. M. Morph. sulph. 2
millegrams at night.

13th day. Quin. sul. 1.30 grams. Severe chill.

14th day. Quin. sul. 1.30. No chill.

15th day. Quin. sul. 2.00. No chill.

16th day. Quin. sul. 2.00. No chill.

17th day. Quin. sul. 2.99. No chill.

18th day. Quin. sul. 1.30. No chill.

19th day. Morphia at bedtime. Quin. sul. 1.30. No chill.

20th day. Quin. sul. 1.30.

21st day. Chill at 5 A. M. Sweating profusely at 10.30 A. M.

22d day. Chill. Fever and profuse sweating. Stop quinia. Ordered
digitalis and whiskey.

23d day. Sweating profusely. Cough begins to be troublesome. Mucopu-
rulent expectoration, stained with blood.

24th day. Chills at 11.30 A. M. and 3 P. M.

25th day. Chills at 2.30 A. M. and 5 A. M.

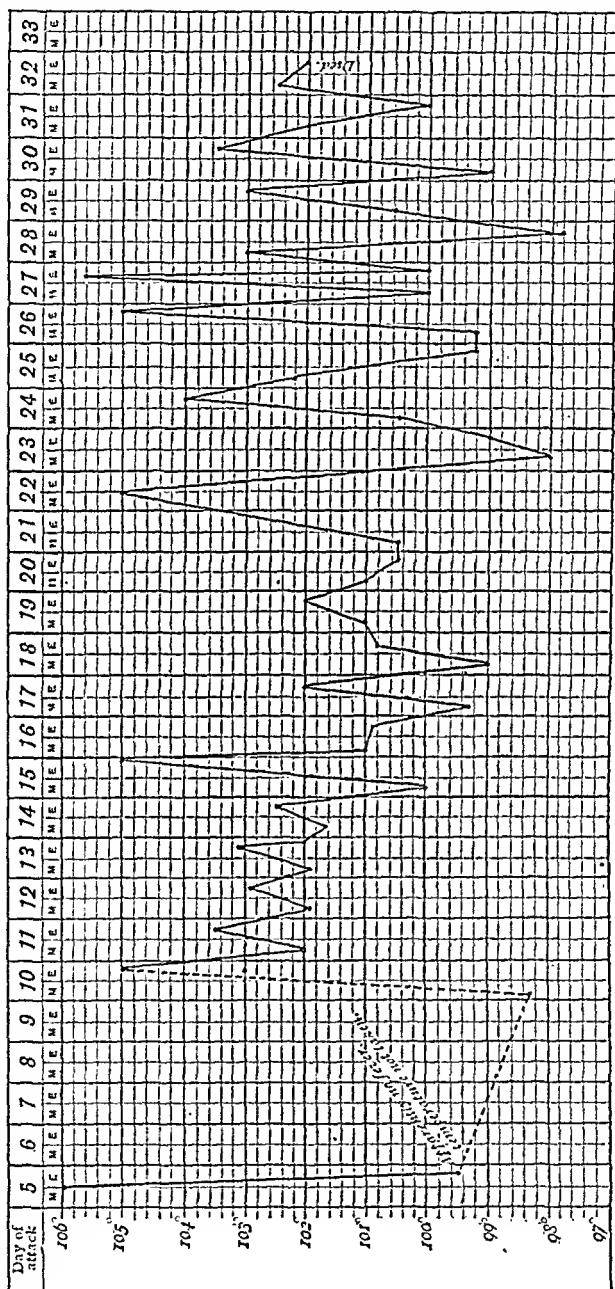
26th day. Profuse sweats. Chills 7.30 and at 9 P. M. Delirious.

27th day. Urine examined, quantity large. No albumen. Sp. gr.
1010. Chill at 1 P. M.

28th day. Chill at 7 A. M. Quin. sul. 2.00 grams. Poultice over
liver.

29th day. Liver somewhat enlarged. Fluctuation thought to be detected
in the liver.

30th day. Liver aspirated. No pus found. Aspirator introduced between 8th and 9th rib at a point about two inches posterior to the lateral line. Urine contains large amount of bile. Respiration 48.



Temperature chart of Charles H.

Autopsy, sixteen hours after death, made by Dr. N. Acker, assisted by Mr. Munson. Present, Drs. Busey, Thompson, C. E. Hagner, Evans,

and Prentiss. Rigor mortis well marked. No peritonitis. No fluid in the cavity of abdomen. Spleen about three times its normal size, congested, pulpy, and dotted over with small infarctions.

Kidneys.—Left kidney one and a half times natural size—pale, showing fatty or amyloid (?) degeneration; capsule easily detached; cortical substance thickened. Condition of right kidney the same. In both were found pyemic infarctions.

Liver.—Slightly enlarged, but normal. Adherent to diaphragm posteriorly. Several spots resembling tubercles, but found under the microscope to be infarctions. Gall-bladder distended with bile. No abscess.

Heart.—Normal.

Lungs.—Left lung: about 12 oz. of serous fluid in the pleural cavity, recent adhesions between the pleura and diaphragm; a small pus cavity, size of a hazel-nut, at the apex, and a number of smaller abscesses (infarctions) in different portions of the lung. Lung congested and oedematous. Right lung: about 7 oz. serous fluid in the pleural cavity; hypostatic congestion of lower lobe—many small infarctions—especially towards the periphery.

Brain.—Membranes normal. Cerebrum and cerebellum normal, except a small abscess, one centimetre in diameter, in the anterior lobe of the left hemisphere of the cerebrum, just at the border of the white substance. The ventricles of the brain were found healthy. The dura mater covering the petrous portion of the right temporal bone was darkly discoloured. On removal the bone beneath was found carious, and an abscess disclosed, which communicated by a free opening with the lateral sinus. The sinus was filled with pus and clotted blood.

Microscopical Examination, by Dr. N. Acker. *Lungs.*—Centre of infarctus was composed of broken-down lung tissue and leucocytes; the surrounding lung tissue being in a state of catarrhal pneumonia. *Kidneys.* Tubular epithelium swollen and granular; some of the Malpighian corpuscles atrophied. *Liver:* In centre of infarctus were found leucocytes and liver cells in state of fatty degeneration; also a few cholesterine crystals. The surrounding liver tissue was congested, and the cells somewhat swollen and granular. *Brain.* The debris in centre of infarctus was composed of leucocytes and cholesterine crystals. The tissue for some distance around the infarctus was pale and devoid of blood, the vessel not containing a single blood corpuscle. Numerous cholesterine crystals were also found in the substance of the brain. An inflamed artery was found about an inch below the infarctus; beyond this the vessels were empty.

This case was closely watched, and studied with interest by the physicians in attendance; namely, in addition to myself, Drs. W. W. Johnston, S. C. Busey, and J. Ford Thompson. The exact diagnosis was not clear from the beginning, and was still doubtful when the man died. It was evident that suppuration was going on somewhere, and that poisoning of the blood had resulted; but just where the diseased process was located was not determined until the autopsy.

The chills were irregular in their return, were very violent in character, the extremities becoming cold and blue, and the face pinched and dark—*congestive chills*, in fact—and the fever following was very high, 105°, 105.5°, and 106°, in spite of 2.00 gm. doses of quinia. They were not

controlled by quinia, although on two occasions they appeared to be held off for several days.

During the first ten days there was violent pain in the right side of the head, especially in the temporal region and over the eye, but there was no swelling or soreness about the mastoid portion of the temporal bone. There was a moderate discharge of thin, purulent matter from the ear. These symptoms, taken in connection with the previous history, led to the suspicion that there was an abscess of the mastoid cells, which had ruptured internally in the cranium. But they entirely disappeared after about ten days, when hepatic and pulmonary symptoms took their place. Cough became troublesome, with free muco-purulent expectoration tinged with blood. The liver appeared to be enlarging, jaundice developed, and finally the urine became loaded with bile. Thus special attention was directed to the liver, and the existence of abscess was considered probable. It was aspirated December 10, three days before death, without result.

The autopsy disclosed greatly enlarged spleen, large anæmic kidneys, œdematous lungs, with hypostatic congestion, pleuritis, and slightly enlarged liver, with pyæmic infarctions in the several organs, but did not show the source of infection until the cranium was opened. A dissection of the right temporal bone showed that the pus had been poured directly into the circulation through the lateral sinus.

In the light of the autopsy, it would seem that there should have been no hesitation in making a diagnosis, as, indeed, there would not have been had not the local ear symptom entirely disappeared, and the secondary results of the blood infection drawn attention to other organs.

The hepatic symptoms were so marked that they justified the belief that abscess of the liver existed. That organ was aspirated, not with any hope of curing the patient, but to give temporary relief, and aid the diagnosis.

The most important practical point suggested by this case, is the question as to whether proper surgical treatment of the ear-disease at some time prior to the occurrence of the last illness, would not have averted the fatal blood infection. After the occurrence of the chills, it was, of course, too late to have operated on the mastoid cells with any benefit. But if the mastoid had been trephined, and a free outlet had been given to the unhealthy secretions, *before* the bones became so diseased as to allow a vent inwards, the sequel, in all probability, would have been averted. The man had previously been under the care of an irregular practitioner for the ear trouble.

Another point of interest was the existence of an abscess in the anterior portion of the left cerebrum, without producing any symptoms whatever during life. Had such symptoms occurred they would not have been overlooked, for the patient was carefully watched for indications of cerebral disease, because intracranial abscess was suspected. There was no paralysis of either motion or sensation; no aphasia, and no delirium until exhaustion set in.

ARTICLE XXI.

WHAT CONSTITUTES INSUFFICIENCY OF THE INTERNAL RECTI MUSCLES?

BY SAMUEL THEOBALD, M.D., OF BALTIMORE.¹

DURING several years a conviction has been gradually developing in my mind that I did not know what constitutes insufficiency of the internal recti muscles, or, at least, that I did not know where the line between sufficiency and insufficiency should be drawn. When, in seeking to account for the existence of asthenopia, I discovered by the usual means a considerable degree of hypermetropia or of astigmatism, I felt that I had found something which was definite and real, and I had little doubt that the correction of this defect would be followed in due time by the disappearance of the asthenopic symptoms; but, on the other hand, when, failing other causes, I was led to examine the state of the muscles of convergence, and by means of the tests usually relied upon, discovered, according to the accepted standards, insufficiency of these muscles, I felt that I was dealing with something which was far less definite, and I could not escape the suspicion that the therapeutic measures which this discovery prompted me to take were, perhaps not unfrequently, directed against an evil which had only an imaginary existence.

So far as I can account for this state of mind, it was due, first, to the fact that I seldom sought for insufficiency of the internal recti muscles without finding it, unless hypermetropia existed; secondly, to the frequency with which I observed the disappearance of asthenopic symptoms without any diminution in the apparent insufficiency of the muscles; and, thirdly, to the contradictory character of the results which I obtained in many cases from the different tests upon which we are taught to rely to determine the existence and to measure the amount of this anomaly.

The important influence which errors of refraction exert upon the behaviour of the muscles of convergence; the necessity of correcting such errors or of allowing for their influence, in applying the tests for insufficiency; and the propriety of distinguishing between real insufficiency or weakness of the internal recti-muscles and the apparent insufficiency which is so commonly associated with myopia, and which is due to disturbance of the normal relation between accommodation and convergence, were forcibly impressed upon my mind some years ago, through a study of the behaviour of my own myopically formed eyes, and in a paper entitled "An endeavour to show that insufficiency of the internal recti muscles and myopia have been erroneously associated; and that the muscular asthenopia of myopia is not the result of such insufficiency, but of the anomaly of refraction," published in the *Am. Journal of the Med.*

¹ Read before the American Ophthalmological Society at its annual meeting in Newport, R. I., July, 1881.

Sciences, in January, 1874, I dwelt at some length upon these points. At that time I argued that the Graefe tests for insufficiency of the internal recti muscles, though trustworthy when applied to emmetropic eyes, are calculated to give deceptive results in ametropia, because of the disturbance of the normal parallelism between accommodation and convergence, unless as preliminary to their application the precaution is taken to correct the error of refraction. That, owing to the disposition which ametropic eyes always exhibit to restore this normal parallelism, an effort to do so is made so soon as the production of vertical diplopia annuls the still stronger desire for single vision, and that as a result of this the vertical prism tests show "in hypermetropia, an excess of power in the internal recti muscles which is not real," and, "in myopia, an insufficiency which is only apparent," being merely the expression of "the ever present, but for the moment unrestrained desire, to exact as little work of the internal recti as is at the same time required of the ciliary muscles." In support of this view I mentioned that an apparent insufficiency of 12° , which my own eyes, with $M_{1\frac{1}{2}}$, exhibited at $8''$, disappeared entirely with total correction of the myopia, diminished with partial correction, and was increased by convex glasses; and, further, that when the experiment was tried of placing before one eye a convex glass, and before the other a concave glass, which more than neutralized the myopia, so that objects could not be seen distinctly at the same time with both eyes, the images of the dot in the vertical diplopia test changed their positions in such a manner, as to indicate excess of power in the internal recti when the dot was seen distinctly with the over-corrected eye, with strained accommodation, and marked insufficiency when looked at, with relaxed accommodation, with the eye before which the convex glass was placed.

Two other possible sources of error in Von Graefe's dot and prism test, which were detected during my experiments, were also pointed out, and a means of getting rid of them suggested. The relation between accommodation and convergence being so intimate, it becomes important that during the examination the eyes should be accurately accommodated for the distance at which the test object is held. Now the round dot of the Graefe test, since it remains a round dot, and is seen almost as distinctly whether brought exactly to a focus upon the retina or not, does not offer a sufficient incentive to accurate accommodation, and is, therefore, ill-adapted to the purpose for which it is employed. For this reason the substitution of a star for the dot was proposed—a cross, which otherwise might have answered still better, being discarded because of the confusion to which it would be likely to give rise should astigmatism happen to be present. The other source of error lies in the undue length of the vertical, bisecting line. The two images of this line overlap; and this was found in a measure to annul the influence of the vertical diplopia, an involuntary inclination to blend the overlapping portions of the images being felt.

The omission of the line, therefore, since it is not an essential part of the test, was recommended.¹

¹ An interesting and instructive article by Dr. E. G. Loring upon "Tests for the Insufficiency of the Recti Interni Muscles," which appears in the Transactions of this Society for 1868, has been brought to my notice, since the preparation of this paper was begun, by my friend Dr. Russell Murdoch. In this article Dr. Loring discusses the trustworthiness of the several tests proposed by Von Graefe, and especially considers *whether the vertical diplopia tests do away with all voluntary control over the muscles of convergence, and whether the prism which reduces crossed images to the same vertical line expresses the whole amount of the insufficiency of the interni.* His conclusions upon these two points are, that the production of vertical diplopia does not always prevent such control, and that the prism which reduces the images to the same vertical line, in some instances, indicates only a part of the total insufficiency. In support of the former conclusion, he mentions a case in which a patient during the application of the test was able to produce at will either crossed or homonymous images in both near and distant vision, and cites his own ability to do this with the test card at twelve inches. This faculty of changing the position of the images is, I think, due rather to voluntary control of the accommodation than to direct command over the internal recti muscles, the alteration in the direction of the visual lines being brought about by increasing at one moment and diminishing at another the tension of accommodation; at all events the ability to control the position of the images, without a corresponding change of accommodation, must be of extremely rare occurrence. We have it in our power, therefore, to prevent this perplexing accident, by insisting that the test object be accurately accommodated for; and this the change in the form of the object which I have proposed renders more easy of accomplishment.

The second conclusion is sustained by reference to cases which he had frequently met with, in which "after we have brought the images from being crossed into the same vertical line, we can go on adding prisms, sometimes those of considerable degree, and yet the images remain exactly over each other, instead of becoming homonymous." The explanation offered of this occurrence, that it is due to the existence of *latent* insufficiency, comparable to latent hypermetropia, does not seem to me very satisfactory. In the first place, latent insufficiency to be comparable to latent hypermetropia should be insufficiency which cannot be immediately rendered manifest by glasses, whereas the insufficiency which Dr. Loring describes as latent, expressed by the difference between the weakest prism which causes the images to stand in a vertical line, and the strongest which does not induce homonymous separation, is brought out at once by this means. Furthermore, how does this explanation help us to comprehend the singular circumstance, that with each increase in the strength of the prisms the latent insufficiency is brought out, or the internal recti muscles yield, to exactly such an amount as to keep the images directly one above the other? In hypermetropia, exactly a forty-eighth, next a forty-second, and then a thirty-sixth is rendered manifest by the application of glasses, because the ciliary muscle is prompted each time to yield to just that extent to accomplish a definite purpose—the maintenance of distinct vision; but why should the internal recti muscles, with apparently no definite purpose to be served by keeping the images in the same vertical line, yield in the regular manner described? Dr. Loring's suggestion of latent insufficiency certainly affords no explanation of this. The true explanation, it seems to me, is to be found in quite a different direction—in the overlapping of the images of the unduly long bisecting line of the test, to which I have referred as a possible source of error, and the obviation of which I have proposed because of the likelihood of its giving rise to just such confusing results. Suppose in a case of insufficiency of considerable degree this inclination to fuse the overlapping portions of the lines, exists, the images being widely separated this disposition would probably remain in abeyance, but so soon as they were brought somewhat nearer together, by a

Though these several sources of error in the determination of insufficiency of the internal recti muscles attracted my attention early, and though subsequently they were kept constantly in mind, and in practice were guarded against by the adoption of the precautionary measures to which I have referred,¹ a feeling of uncertainty as to the trustworthiness of the results which I obtained in dealing with this condition has, as I have said, with the increasing experience of the last few years forced itself, more and more, upon me. The disappearance of asthenopic symptoms in certain cases, without any diminution in the insufficiency of the internal recti muscles, upon which they were supposed to depend, and the existence of which had been demonstrated by the usual tests, especially suggested the inquiry, *whether, even in emmetropia and with accommodation properly regulated, a considerable relative divergence of the visual lines might not occur in connection with vertical diplopia, and still no insufficiency of the internal recti muscles be present*, or, if this be interpreted as proof of insufficiency, whether this so-called insufficiency might not exist to a marked degree, and the eyes be none the worse for it.

In order to determine whether or not this was the case, I concluded to examine with especial reference to this point a number of strong-eyed, non-asthenopic individuals; and in selecting suitable subjects for this purpose, to make the experiment more decisive, I chose only those whose occupations led to frequent use of the eyes in near vision. My examinations were not confined to emmetropic eyes, but whenever errors of

prism representing perhaps only one-half of the true insufficiency, they would be fused by an unconscious effort. Now it is evident that with each increase in the strength of the prisms, until the one was reached which truly represented the insufficiency, the fusion of the lines would be rendered easier of accomplishment, and that after this point had been passed, the prisms might be progressively increased for some time before this tendency would be again annulled by a too wide *homonymous* separation of the images. In this persistent blending of the overlapping images of the line, it is evident, is implied exactly such exceptional behaviour of the interni with prisms of different strength as Dr. Loring describes; and which exceptional behaviour I may add, in confirmation of this view, I have never observed with the test modified as I have proposed. While, therefore, endorsing much that is contained in Dr. Loring's article, especially what is said concerning the influence of errors of refraction in modifying the results of the Graefe tests, I am compelled to differ with him as to the significance of these two observations, to which he especially directs attention.

¹ During the discussion which followed the reading of this paper Dr. R. H. Derby, formerly a pupil of Von Graefe, stated that in 1869 Von Graefe, himself, had modified his original vertical diplopia test for insufficiency in almost the identical manner which I afterwards suggested (in my paper in the *Am. Journal Med. Sciences* in 1874), and for reasons almost precisely the same, and that he had described these modifications in an article in the *Klinische Monatsblätter für Augenheilkunde*, in 1869. It would seem that the suggestions contained in this paper of Von Graefe, referred to by Dr. Derby, have attracted comparatively little attention, at least they are not alluded to in any textbook upon diseases of the eye with which I am familiar; even Soelberg Wells, Von Graefe's pupil and disciple, does not mention them, but describes only the original test. Dr. Derby's mention of them at Newport, last summer, first brought them to my notice.

RESULTS OF PRISM TESTS.																
At 20".																
At 12".																
No.	Sex	Age	Refrac- tion.	Vis- ion.	Result of Cover Test at 12".	With error of refraction corrected.					With error of refraction corrected.					REMARKS.
						Insuf. intern. recti.	Insuf. extern. recti.	Intern. recti. over- come.	Insuf. intern. recti.	Insuf. extern. recti.	Intern. recti. over- come.	Insuf. intern. recti.	Insuf. extern. recti.	Intern. recti. over- come.		
1	F.	31	Hm. $\frac{1}{10}$	20 xx	No per- ceptible movem't.	3°	....	14°	4°	....	11°	0°	....	1°	....	Has strong eyes. Reads and sews great deal, and has never worn glasses. Never complains of eyes; goes to school; does not wear glasses.
2	F.	11	Hm. $\frac{1}{18}$	20 xx	No per- ceptible movem't.	2	....	34	3	....	28	0	....	0	....	Eyes "very strong." Reads and sews great deal, and has never worn glasses. Wears glasses irregularly, for distance only. Eyes never troublesome, though she reads and does fine needlework.
3	F.	23	Hm. $\frac{1}{18}$	20 xx	Not tried.	6	....	46	7	....	....	0	....	0	....	Teaches school. Has worn glasses to correct Hm. for three years. Physician Reads a great deal. Eyes never trouble- some.
4	F.	24	M. $\frac{1}{10}$	20 xxx	Marked diverg. with m. corrected	22	....	70	2	....	....	2	....	0	....	Book-keeper. Wears, in near vision, + $\frac{1}{10}$.
5	F.	12	M. $\frac{1}{14}$	20 xx	No per- ceptible movem't.	2-3	....	34	....	10°	28	0	....	1	16	School teacher. Reads a great deal. Has never worn glasses.
6	F.	37	Hm. $\frac{1}{10}$	20 xx	No per- ceptible movem't.	0	....	41	2	....	21	Less than 1	....	....	....	Book-keeper. Writes con- stantly and never has any trouble with eyes.
7	M.	21	E.	20 xx	Consi- derable di- vergence.	11	....	14	....	....	....	....	....	....	....	Attends school, and is a constant reader. Eyes never troublesome.
8	M.	41	E.	20 xx	No per- ceptible movem't.	3	....	60	....	....	....	0	....	....	....	Med. student. Reads a great deal, and never experi- ences discomfort from it.
9	F.	29	Hm. $\frac{1}{18}$	20 xx	No per- ceptible movem't.	0	....	34	1-2	....	....	....	1°	....	1	
10	M.	23	E.	20 xx	No per- ceptible movem't.	8	....	34	....	....	....	1	....	....	....
11	F.	16	E.	20 xx	No per- ceptible movem't.	6	....	34	....	....	....	1	....	....	....
12	M.	21	E.	20 xx	No per- ceptible movem't.	2	....	27	....	....	....	....	1	....	....

¹ Upon second trial, after acquiring the knack of contracting the internal recti, he was able to overcome at 12" 55°.

refraction were found to exist the tests were applied, first without, and then with correcting glasses. The vertical diplopia tests were made at 12'', and at 20'; at the former distance the test object employed was a small star with short, vertical bisecting line, held a little below the level of the eyes; and at 20' a candle-flame, similarly placed. The prism used for producing the diplopia was one of only 7°, which was found quite strong enough, and more convenient for the purpose than those of greater power. As supplementary to the diplopia tests the cover test was applied at 12'', and the capacity of the internal recti muscles to overcome prisms producing lateral displacement was determined in each instance. In examining the state of refraction only the *manifest* hypermetropia was determined, as it was not considered important to ascertain the total amount.

Twelve persons, selected as I have said with especial reference to their freedom from asthenopia, in spite of their eyes being much used in near work, were examined in this manner. The result obtained in each instance is given in the table on the preceding page.

Although the number of eyes which I have examined is not large, it is sufficient for the end in view, since the results obtained show that relative divergence of the visual lines, such as has been regarded as proof of insufficiency of the internal recti muscles, does, in fact, occur very frequently, as an accompaniment of induced vertical diplopia, even in the strongest-eyed persons. A glance at the table will show that this took place, to a greater or less extent, not only in every emmetropic person examined, but that it happened in connection with low grades of manifest hypermetropia, uncorrected by glasses, in three instances in five. Of the five emmetropic persons, with the test object at 12'', one exhibited a divergence indicating an insufficiency of the internal recti muscles of 2°, and the others of 3°, 5°, 8°, and 11° respectively; and even with the object at 20', three of these showed slight relative divergence. In the hypermetropes, with the test at 12'', an apparent insufficiency of 3° was associated with Hm $\frac{1}{10}$, 2° in one instance, and 6° in the other with Hm $\frac{1}{8}$, and of the two individuals in whom no insufficiency was discovered Hm $\frac{1}{8}$ was present in one and Hm $\frac{1}{16}$ in the other. As might be expected, none of the hypermetropes showed any apparent insufficiency of the interni at 20', but, on the contrary, one of them showed apparent insufficiency of the externi.

The influence of the state of refraction upon the behaviour of the internal recti muscles, and the way in which neutralizing glasses modify the results of the vertical diplopia tests, are well shown in the table. Thus, while the five hypermetropes show at 12'' an average apparent insufficiency of 2 $\frac{1}{2}$ °, which with correction of the manifest error of refraction is increased to 3 $\frac{1}{2}$ °, the emmetropes show an average of 5 $\frac{1}{2}$ °, and the two myopes of 12°. Furthermore, it will be seen that the 22° of apparent insufficiency which

is associated (in No. 4) with M_{16}^1 , is reduced to 2° when the test is repeated with neutralizing glasses, and that (in No. 5) an apparent insufficiency of the interni of 2° to 3° is changed to apparent insufficiency of the externi of 1° by the correction of M_{24}^1 .

Another point to which I have alluded, the contradictory character of the results which are obtained in many cases from the different tests for determining the strength of the internal recti muscles, is also well shown. Thus, No. 4, though exhibiting at 12" (with M_{16}^1 uncorrected) an apparent insufficiency of 22° , twice as much as any of the others, was able to overcome, at the same distance and without neutralizing glasses, prisms with bases outwards amounting to 70° , while No. 1, with 3° of insufficiency, overcame but 14° , No. 12, with 2° of insufficiency, but 27° , No. 6, with no insufficiency, but 41° , and No. 9, also with no insufficiency, only 34° , less than half as much. The explanation of this paradoxical result is, that the ability to overcome prisms of high power thus placed does not, in fact, depend upon the strength of the internal recti muscles, but simply upon the individual under examination possessing the "knack" of causing these muscles to contract strongly—a faculty which we often meet with in persons who can look cross-eyed at pleasure.

Evidently, then, upon *this* method of ascertaining the strength of the internal recti muscles but little dependence can be placed, and since it has been shown that, in the strongest-eyed persons, relative divergence of considerable degree frequently accompanies vertical diplopia—even when every precaution is taken to prevent confusion in applying the tests—the question arises, How are we to determine the existence of actual insufficiency of these muscles? Of course, we shall have little difficulty in recognizing the higher grades of insufficiency, those which are not far removed from divergent strabismus, but the difficulty occurs in dealing with the slighter degrees—in deciding, indeed, *where to draw the line between sufficiency and insufficiency*. For myself, I confess I do not know where the line should be drawn, whether at eight or at eleven, or, perhaps, at twelve or fifteen degrees of relative divergence; but of one thing I am convinced—that the tests proposed by Von Graefe, as I have understood them, and as I believe they have usually been interpreted, are calculated to lead to erroneous conclusions regarding the strength of the internal recti muscles; and that to prevent this it is necessary, not only to take into consideration the state of refraction, to be sure that the accommodation is properly regulated, and to be careful that an incentive to binocular fixation does not arise through overlapping of portions of the vertically separated images, but, in addition, to recognize the fact *that relative divergence of the visual lines, even of considerable degree, occurring in connection with vertical diplopia, and after these several precautions have been taken, does not necessarily indicate insufficiency of the internal recti muscles, or, at least, that it is not incompatible with entire freedom from functional disorder.*

ARTICLE XXII.

CASE OF FIBROMATOUS POLYPUS OF THE BLADDER IN A CHILD. By G. H. BALLERAY, M.D., Surgeon to St. Joseph's Hospital, Paterson, N. J., and to the Woman's Hospital, Newark, N. J.

IN the early part of October, 1879, I was requested by the Rev. Mr. S. to see his little daughter, aged nineteen months, who was, he informed me, the subject of polypus of the bladder. The child had previously been under the care of Dr. Herman Mynter, of Buffalo, whose very interesting report of the case was published in the number of the *Buffalo Medical and Surgical Journal* for August, 1879. Of the early history of the case, I learned that for about fifteen months the child had urinated frequently, and, that every time, she strained, screamed, and kicked violently, for some time after the urine had passed. In May, 1879, the mother noticed that a little red bleeding tumour was forced down during the straining. On the 11th of June, 1879, the patient was taken to Dr. Mynter; chloroform was given, and an examination made. At first nothing was discovered; but suddenly the child passed water, and thereafter strained with much force. Immediately a red, lobular, bleeding, pedunculated tumour, about the size of a hickory-nut, came into view. A ligature was placed around the base of the tumour, this produced increased straining, and several smaller growths appeared on all sides of the larger one. Dr. Mynter says: "believing I had here a polypous new-growth of the *vagina*, and as the larger tumour *obstructed the view of the parts*,¹ I desisted, for the moment, from further examination."

Three days later the ligated tumour had fallen off; and on the posterior vaginal wall, a little above the hymen, was found "a little granulating prominence," which was believed to be the remains of "the severed pedicle." No trace was discovered of the smaller tumours, and Dr. Mynter, therefore, believed that without knowing it he had gotten the ligature around them too. As no relief to the pain or frequency of micturition followed the removal of the large tumour, a sound was introduced into the bladder, and both Dr. Mynter and Dr. Lothrop noticed a "click," as though the sound had touched a stone. Two days later an attempt was made to remove the stone. The urethra was dilated, and the forceps introduced into the bladder, but no stone was found. The finger was then passed into the bladder, but no stone detected. The bladder was then syringed out with lukewarm water. The child immediately commenced to strain, and pressed out through the *urethra* a polypous mass as large as a pigeon's egg, consisting of hundreds of small, pedunculated tumours, seemingly springing up from the mucous membrane everywhere. Portions of the mass were twisted off with forceps, others were cut off with scissors. Dr. Mynter says "very little bleeding occurred, but there seemed to be no end to the growths. The whole, considered as one tumour, had a broad base, consisting of the mucous membrane of the bladder, and it seemed to us that the whole interior surface of the bladder was involved in this singular new growth. The more we pulled, the more came out, and, believing in this case discretion to be the better part

¹ Italics are mine.

of valour, I therefore, the other physicians concurring, reduced the tumour and cleaned the cavity of the bladder."¹

The relief which followed this operation by Dr. Mynter, was of short duration; the distressing symptoms soon returned with their former violence. When I first saw the child, although she was still rather fat, she had a haggard, anxious expression of countenance. The mother informed me that for several weeks past she had been obliged to draw off the urine every half hour; if a longer interval was allowed to elapse, the sufferings of the child were most intense. Frequently, portions of the tumour were forced out of the meatus, by the expulsive efforts following the withdrawal of the urine. As no portion of the tumour was visible at the time that I made my examination, I requested the mother to send for me at once should a part of the growth be forced down so as to become visible. Accordingly, in a few days I was sent for, and found that a large polypoid mass had been forced through the meatus. With the aid of my friend, Dr. Marsh, I proceeded to remove it; the patient being under the influence of chloroform. The mass consisted of two polypi the size of hickory-nuts, surrounded on all sides by hundreds of little ones. A ligature was placed around the base of each of the larger polypi, and by means of traction upon the ligatures a considerable portion of the mucous membrane of the bladder could be everted through the urethra. All the polypi which presented were removed with scissors. The bladder was then syringed out with warm water, and an anodyne given. The relief which followed the removal of these growths was very great; for nine weeks after the operation the child could hold its urine for three hours at a time, and improved very much in health. By the middle of December, the distressing symptoms had returned to such an extent as to necessitate the use of the catheter every hour; and by the end of the month it had become necessary to withdraw the urine every half hour. The mother (who had become quite expert in the use of the instrument) informed me that she frequently experienced difficulty in introducing the soft catheter with which the bladder was evacuated. On examination, I found that this was due to the encroachment of the growth upon the neck of the bladder. As no portion of the tumour became visible during the straining efforts of the child, an examination, under chloroform, was made on the 29th of December, in the hope that a sufficient portion of the growth could be reached and removed, to give the poor child another respite from the agony it was compelled to endure; but no satisfactory results followed this attempt. The symptoms increased in severity, mucus and pus appeared in the urine; the pulse became very frequent and feeble; the face pinched; the eyes sunken; and twitching of the muscles of the upper extremities, with occasional vomiting, occurred. The suffering caused by the pressure of the growth upon the neck of the bladder was distressing to witness; and, on several occasions, the vesical extremity of the urethra was so completely blocked up by the tumour, that the introduction of the catheter, without inflicting injury, was a matter of considerable difficulty. The little patient continued to sink gradually, and died on the 13th of January, 1880—death resulting partly from exhaustion (the effect of protracted suffering) and partly from uræmia and pyæmia. Four

¹ A microscopical examination of the tumour, made by Dr. Hopkins, showed that it consisted of connective and fibrous tissue with very few cells, and was covered with normal epithelium.

days before death, a considerable mass of polypoid growths was forced out of the meatus: this I ligated and removed; but nothing more was done, as it was evident that death was inevitable, and that any prolonged operative procedure would only hasten the fatal termination. At this time both Dr. Marsh and myself noticed a tumour, rising a little above the pubes, which we thought was the bladder, filled with polypoid growths.

Post-mortem examination, twenty-four hours after death, in the presence of Drs. E. J. Marsh and Calvin Terriberry. Examination limited to abdominal and pelvic cavities. The bladder, ureters, and kidneys, together with the uterus and ovaries, were removed and examined. The walls of the bladder were very much thickened, and its cavity was filled by a polypus, which was attached to the posterior wall of the organ, by a pedicle about an inch and a quarter in breadth. A portion of the pedicle of what had evidently been a much smaller tumour, was also found attached to the posterior wall of the bladder, at its lowest part, encroaching upon the neck of the organ. The tumour, as a whole, was about the size of a large hen's egg, and was composed of a multitude of small tumours, varying in size from that of a hickory-nut to that of a small pea. The ureters were dilated, and the pelves of both kidneys were also dilated and inflamed, and contained some urine mixed with pus. The kidneys were enlarged, and presented the lobulated appearance generally met with in the kidneys of young children. There were three abscesses in the left kidney, and two in the right. These abscesses were located on the outer or convex surface of each kidney, and presented the appearance characteristic of a pyæmic abscess. The liver was apparently healthy, but the spleen was enlarged and softened.

The points of interest in this case are: First, the extreme rarity of cases of this nature. Secondly, the difficulty of making a correct diagnosis, and applying a rational treatment in cases of this affection. Lastly, the tender age of the patient, which precluded the possibility of the performance of an operation which, had she been older, could, I believe, have been done with success.

In this case, the vagina was so small that, even after the utmost dilatation, removal of the growth by an incision into the bladder through the vagina would have been impracticable.

Viewing the case in the light afforded by post-mortem examination, I believe that the proper course to have pursued would have been to remove the growth by opening the bladder through the abdomen. Should I ever meet with a similar case (which is extremely improbable, in view of the rarity of the affection), I should consider it my duty to recommend removal of the growth by supra-pubic cystotomy. To some of my readers this may appear to be a heroic procedure, but to such I would say that "desperate cases, require desperate remedies." Where the question is simply one of certain death on the one hand, or, an operation with the possibility of recovery on the other, I think that no conscientious surgeon should hesitate in his choice of alternatives. In the case of a girl of more advanced age, or an adult female, such a growth might be successfully removed by an incision into the bladder through the vagina.

REVIEWS.

ART. XXIII.—*On the Contagiousness of Tubercle.*

1. *Consumption as a Contagious Disease; with its Treatment according to the New Views. To which is prefixed a Translation of Professor Cohnheim's Pamphlet, "Die Tuberkulose vom Standpunkte der Infectionslehre."* By DANIEL HENRY CULLIMORE, Member of the King and Queen's College of Physicians. London: 8vo. pp. 124. Baillière, Tindall, and Cox. [No date. Preface dated, December, 1880.]
2. *Consumption: Is it Contagious?* By D. FRANCIS CONDIE, M.D., of Philadelphia. *American Journal of the Medical Sciences*, July, 1871, p. 119.
3. *Consumption: Is it Contagious?* By LAWSON TAIT, F.R.C.S. Eng., F.R.C.S., etc., Surgeon to the Birmingham and Midland Hospital for Women. *American Journal of the Medical Sciences*, October, 1871, p. 419.
4. *Is Phthisis Pulmonalis Contagious, and does it belong to the Zymotic Group?* By W. H. WEBB, M.D., of Philadelphia. *American Journal of the Medical Sciences*, April, 1878, p. 426.
5. *Is Consumption Contagious?* By EDGAR HOLDEN, M.D., Ph.D., President of the Medical Department of the Mutual Benefit Life Insurance Company, Newark, New Jersey. *American Journal of the Medical Sciences*, July, 1878, p. 145.

IF we are to accept the teaching of the authors, who have written the books and papers, the titles of which are given above, it is necessary to ascertain the meaning to be given to contagion. It would seem to be well—nay, essential that the boundary lines, as at present understood, between the things called contagious and those of an infectious nature should be altered. And it may be that the time has arrived when very properly some change of view or definition of these two conditions should be made. It is a shock to hear the word contagion used in the manner in which it is intended to be understood by these writers. In spite of the great confusion of meaning attached to these words and those of similar import, it will be found that, both in scientific works and in common parlance, there is a very radical distinction in the manner of communicating disease as implied by them. It is no longer possible to appeal to their definition, or to their use by the best authors. The two words are defined as synonyms, and yet in their use it is very easy to discover different shades of meaning or even very complete divergences, and that, too, in writers who at times make them synonymous. Contagion, according to its derivation, signifies contact, and yet in its common use contact of person is the farthest from necessary for the communication of disease. Contact, not of persons, but merely contact of a person with the material essence of the disease is the essential, according to the present acceptance of the word.

If we adhere to the definition of the word, syphilis, glanders, and

hydrophobia are almost the only diseases requiring actual contact, direct or nearly direct, of person with person for their communication. Inoculation would seem to be a better word for expressing the more ordinary means of their communication.

Further, it must be borne in mind that in classifying disease under these various heads, it will be found their transmission is possible by more than one method. Variola is contagious, and is also inoculable. Syphilis is inoculable but not contagious in the way that variola is, viz., by transmission through the air.

But let us look at what have been considered as the factors of contagion. First, the development, not spontaneous, of a *something* within the organism which is possessed with the power of reproducing a similar train of phenomena in a second organism, and so on indefinitely. The chief peculiarity which attaches to contagious diseases is the means of their transmission from person to person, viz., that the way they travel and the *something* which travels are unseen. This latter peculiarity is, we think, the striking and prominent idea when the word contagion is used.

As we have said, syphilis and like diseases are, according to the etymological sense, the only necessarily contagious diseases because contact is essential to their transmission—other contagious diseases have other means for communication than contact—and these diseases are more conveniently named as inoculable ones. Syphilis resembles, however, the contagious diseases in possessing the *something* which indefinitely reproduces itself.

We have, therefore, the two classes, the one according to its ordinary method of transmission inoculable, the other class ordinarily communicated by unseen methods. This attempted classification is, we are abundantly conscious, not accurate, scientific, or logical, but neither is the word contagion, as at present employed, possessed of either of these three qualities.

Let us consider the question of infection and its relations to the two above described modes of communicating disease. This word is used by many writers as a synonym of contagion; perhaps it would be more accurate to state that the adjectives infectious and contagious are used interchangeably. We think, however, in every accurate meaning and valuable sense of the word that there is a very marked difference between contagion and infection. The etymology, which, of course, is not to be trusted very far when words have wandered so far from their meaning, implies a stained, or let us say, a poisoned condition, and this effect is usually applied to the air as the vehicle of transmission.

We think that this etymological sense adheres to the word infection and distinguishes it from contagion. The air may be infected by foul gases or other qualities by which diseased conditions are produced in most persons subjected to their influence, as is believed to be the case in yellow fever. Drinking water, as well as the air, may be infected and produce dysentery and typhoid fever. It is also possible to speak of the air becoming infected with the emanation from contagious diseases. But this is not saying much to the purpose, and at best it is not saying more than that the number of contagious-disease patients are very numerous, and the air very full of their emanations. Besides, it is confounding the two eminently characteristic methods of communicating disease, which we are endeavouring, almost vainly, to differentiate, because labouring with inaccurate words whose meanings overlap, or are partly inclusive of, each other. At best, to speak of the contagion infecting the air, is to describe the lesser by the greater. Variola and scarlet fever poisons, or emanations which are

strictly contagious, may infect the air, but typhoid fever which infects water, is never contagious.

If then the words *contagion* and *contagious* could be limited in their signification to the transmission of the disease through air by impalpable or unseen means or agents, inoculation to those diseases where the means are palpable and generally gross, and infection to those morbid conditions which are not either contagious or inoculable, and for the production of which emanations carried directly from one organism to another were not necessary, we should be able to form distinctions between classes of disease that would appeal to a common idea of the general characteristics in respect to their ordinary modes of transmission more conveniently than is at present possible.

Unfortunately it is not possible to classify diseases according to this method; contagion and infection are words by which we can only hope to obtain a little help for characterizing certain qualities. By thus limiting these words we partially avoid giving expression to an hypothesis of the nature of the *something* which passes, and merely define the ordinary and most usual, but not the only, mode of passage. And this we consider to be a very desirable point to be gained, since, in these days of the germ theory and microbial organisms of disease, our ideas of the nature of a malady are so liable to be influenced by the theory of its transmission. The nature of a disease must be described, the mode of its communication may be characterized by a brief word. This criticism is applicable with especial force to the word *zymotic*, which has been used as synonymous with contagious or infectious; it is an attempt to connect the nature of the disease, viz., its supposed character of fermentation, directly with its mode of transmission, and to make the two separable conditions interchangeable words. The word virus, as well as the word poison, is likewise unfortunate. They are an imaginative use of words, implying facts and conditions of which we are still in ignorance, and when the knowledge is acquired in reference to them it will be much better expressed by other more definite terms.

In respect to the materiality of the *something* of disease, opinions have varied very greatly at different periods of medical history. At no period, we believe, has the essential immateriality of the matter been claimed, yet so closely has it been thought to approach an ethereal or spirituous character that it was quite beyond the appreciation of our senses, if not beyond the ken of our imagination. But in recent days nearly all things have become material, and while philosophy grudgingly allows the imponderableness of thought, no such tenuity is conceded to disease. We see, handle, plant, and cultivate, and harvest the contagious agent of many diseases, or think we do. The contagion-bearing fungi of measles and scarlet fever were pointed out some years ago, but have since been abandoned to the musty straw from which they sprang. Some years ago the ague-bearing plant was found in Ohio, and we saw it cultivated in Boston, and now another one, we believe of a different species altogether, has just been receiving great attention in Italy. Diphtheria too has its botany.

Now, while it is universally conceded that the *something*—the transmitting agent—of disease is material in all cases where transmission is claimed to occur, yet we think, in respect to the three modes of transmission, contagion, inoculation, and infection, the bulk or size, if not the quantity, of the material transmitted bears its share in qualifying the sense in which these words are used.

In contagion, impalpable and unseen, the disease is supposed to be carried by very small amounts of the material; the morbid agent, once brought in contact with the organism, unprotected from its effects, develops and reproduces itself, and is itself ready again for transmission. In inoculation, our natural ideas turn to larger bulks, something to be placed on our scalpels. The infective diseases call up the picture, if not necessarily of large amounts of the material essential to be brought in contact with the organism, at least of a large quantity of the poisoning material which is to flood the vehicle which carries it. Such ideas, respectively, we think necessarily attach themselves to the nature of the diseases and the modes of their transmission, so far as we are acquainted with their qualities, and do not merely appertain to the words selected to express the facts.

In respect to actual substance found in the giver and receiver—the originator and organism affected by the material of disease, our ideas ally themselves in accordance with the mode of transmission, although here, we think, the question becomes vague in proportion to our diminished knowledge of the nature of the material transmitted. In the case of inoculable diseases, and in inoculation experiments, we feel certain that portions of living matter are transferred from one person to another, not knowing whether this matter is cellular in character or a fluid. This transfer partakes of the nature of a graft, and to a certain extent the material continues its active life and growth, and it produces a distinct local effect. There is likewise the power of disseminating its action through the receiving organism to a greater or less extent, but whether this is done by the original received matter or from a new formation at the seat of introduction is of course unknown. Of those diseases which are confessedly both contagious and inoculable less is of course known; there may be two elements which have the capacity of transmitting the morbid process. The typically contagious diseases have the element of mystery, uncertainty, and impalpableness so intimately interwoven in our conceptions of them that heretofore no statement about the material transferred has been possible, and free scope has been given to such words as zymotic, virus, etc. That the transferred element forms a part of the organism, and is material and not merely an influence, may be predicated, although not as yet proved; this is probably the sum of our knowledge, and we think it accords with the opinions of men in general.

Numerous special investigations have recently advanced quite different theories. Those diseases, which we have designated as infections, seem to be quite apart and alone in respect to the material agent which, when once brought in contact with an individual, is capable of producing the disturbance in the organism called disease. Both the other classes are regarded, and, so far as their nature is understood, are looked upon as distinct entities; by entities we would imply an actual continuation of the same morbid process, interrupted only so far as incident to the actual process of transfer from one organism to another necessitated. Quite different is the infection process. With infectious diseases, in the majority of them, the pre-existence of the material disease-producing agent in another organism is not necessary to our conception of the disease. Most authors believe that the material of typhoid fever, which is not contagious, is carried by infected water, etc., from one patient more or less directly to a second, but the general class of infections, but not contagious, diseases are thought to exist potentially apart from their development in a patient. The man who ventures into the untrodden swamp is liable to suffer from

dysentery and intermittent fever, but is not liable to the contagious scarlet fever unless it is carried thither by another.

This classification does not include all known diseases, but only those about which heretofore confusion has existed by the use of the words contagion, infection, and inoculation. We think the views here presented will assist in clearing up this confusion, and put us in a position to determine the question before us. We have said that the use of the word contagion as applied to the means of communication of tuberculosis was a shock to our preconceived notions of the matter, and that perhaps the boundary line between contagion and infection required to be shifted, not of course to meet this question, but to place it more nearly in accord with our increasing knowledge of the nature of disease in general.

One word further before considering the facts and opinions furnished by these authors. Contagious and inoculated diseases clearly imply an origin outside of the organism; infection is conceivable as having a source both outside and inside the person affected. Thereby the idea of infection is disassociated still farther from other means of communication and from other communicable diseases, and approaches more closely or shares a common ground with such morbid processes as are spoken of as constitutional diseases.

Having thus somewhat settled our minds by considering the basis on which the solution of this question rests, let us see what are the materials furnished by these writings.

The most important of these papers is the work of Cohnheim, his brochure entitled, "Die Tuberkulose vom Standpunkte der Infectionslehre." It is here given us in translation, and is prefixed to Mr. Cullimore's original matter on the subject "of consumption from a sanitary and pathological point of view, including its treatment according to the new views." In the translation, Cohnheim's pamphlet occupies twenty-four pages of the one hundred and twenty-four. We had the opportunity of reading Cohnheim's writing shortly after its first appearance in German, but do not have the copy at hand for comparison with its present form in English. We read the original with a great deal of interest, and have now re-read it with renewed pleasure, and each time we have been struck with the positiveness of the views expressed by him, which in this respect places the work in a striking contrast to others on this subject.

Cohnheim at first adverts to the opinions of Virchow (1860) on Tuberculosis, and especially in relation to the new doctrine promulgated by "Villemin's treatise (1865) on the transmission of tuberculosis by inoculation." He then alludes to the slow concurrence on the part of others, but "as time passed on, dissenting views respecting it decreased more and more, and now there are in the profession few who deny that *tuberculosis is a contagious disease*." We quote a portion of the sentence, with the italics of the author, as it strikes the key-note of Cohnheim's views of tuberculosis. He offers the "result of his investigations in the new field of inquiry" purely as a pathologist, and not from their clinical aspect.

The author describes first the distinction made by Virchow between true tubercle and the results of the hyperplastic and inflammatory processes; to the former belong the pin's point collections, which increase to nodules of varying sizes by the confluence of a greater or less number, and under the latter we think of the serofulous lymphatic tumours and caseous pneumonia. These two products have nothing to do with each other in their genesis, but in their terminal stage suffer the common fate

of caseation or degeneration. He next alludes to subsequent anatomical discoveries of the structure of tubercle, which have been brought into prominence since Virchow's original work—to the giant cells to whose frequency of appearance Langhans was the first to draw our attention. The work of others is also mentioned; for example, Weigert's criterion of tuberculosis, Schuppel's anatomical history of the lymphatic glands in this disease, and also that of other writers.

Colinheim passes next to the gain medical science has won through the improvement in the method of making experiments, and records the fact that to these alone we owe the benefit of the discovery of the contagious tendency of tuberculosis. He speaks of the methods and the care required in the experiments of tuberculization, and it is to be regretted that so eminent and thorough an investigator has not here furnished us with more details of his work. This is, of course, impossible in the contracted space of his small pamphlet; but it is by these details only that his proposition can receive acceptance.

The conclusions from his labours are stated very definitely.

"Tuberculosis can only be produced by tubercular matter. It is impossible to have found a more perfect criterion with respect to this particular disease. Every symptom tuberculosis has is manifested in animals experimented upon; those particular symptoms, and none other."

After very clearly setting forth the difficulties or the impossibilities of making an anatomical diagnosis between various kinds of deposits found in the lung, between the truly tubercular and those of inflammatory origin, he proposes to rely upon the inoculation test for their differentiation. Let us again quote his conclusion on the inoculation test.

"If we inoculate with slaty indurations and peribronchial nodules, or with the thickened contents of a bronchial tube, the rabbit will not become tuberculous, a result which never fails if the inoculation be performed with tubercular virus. And what are we taught from inoculating with matter taken from human tubercle on one side, and those caseating, inflammatory, and hyperplastic processes? in short, scrofulous ones, or the other? Nothing more nor less than that all these products are potent in a similar degree"—"inoculation with a piece of lung affected with caseating pneumonia, of a caseating testicle, produces a like effect; and nothing succeeds better in inoculation than a freshly excised *scrofulous gland cut out of the neck*."

He claims for the materials which produce the same results in experimentation a similar nature, viz., tubercular.

He goes on to show the unsatisfactory state of the microscopic proofs of the tubercular nature of deposits found in the organs, and with this statement every one must agree. He shows that the various criteria proposed are nearly valueless; the *kernless* accumulations of Lebert, the giant cells, and nodules which appear in their walls, are all conditions or appearances which are found in quite dissimilar growths or deposits.

His conclusion to this part of the subject is as follows:—

"It is not caseation alone, nor kernless accumulation, not nodules or giant cells which are characteristic of tuberculosis, but *solely the caseation the result of specific causes, and the nodules which are derived from specific sources*. Let us try as we will, it won't help us; there are no anatomical definitions to be found for tubercle and tuberculosis. It must yield to the etiological." "Those who believe that all contagious virus is parasitical in its nature will not hesitate to believe that the tubercular poison is corpuscular; and we may await with certainty that in a not very distant future these specific corpuscular elements may

be demonstrated in the tubercular nodule and in the scrofulous products, which the lover of historical names may designate as the tubercular corpuscle."

We do not believe that Cohnheim's views will any more be productive of unanimity in relation to tubercle than those previously promulgated, and yet there is something very seductive and simple in his theory. But before we accept it, let us examine what his conclusions mean, and whether his argument is logically correct.

In the first place—and we think very properly—Cohnheim rejects caseation as the criterion of tuberculosis. This was the claim of Laennec's theory, that every caseating process in the lung was infiltrated or disseminated tuberculosis. Virchow rejected the claim. Now Cohnheim, while rejecting the criterion, reclaims all or nearly all the products of Laennec as tubercle, or tuberculoid, as well as many others which, until now, have never been so regarded, or only exceptionally so. He wishes to give them the name of "eruptive tubercularization." "The cheesy portions, as a rule, contain very little fat, and have the consistence of firmly coagulated white of egg." "It is not, however, necessary for us that they should be classed as tubercle; they are tuberculoid, and the softening and ulceration are only the direct consequences of the caseation." In other words, they are not tubercle, but tuberculoid, because his experiments with the material develop tuberculosis. He assumes in the first place that tuberculosis is a contagious disease, and then tries to prove that all these forms of matter found in organs are tubercle because they produce tuberculosis. The failure consists in the anatomical basis, both at the beginning and the end, being unknown or undefined. He neither defines the anatomical structure with which he starts, nor that at which he arrives or produces by the inoculation. It might perhaps help his argument, but of this we are not very certain, if occasionally, by inoculation with caseating pneumonia, he developed a caseating pneumonia, or to reverse the condition by using the round hard nodules, a caseating pneumonia resulted. But, no, whatever is used, the outcome is always the hard nodule. In this result he agrees with all other investigators, and we have seen the same ourselves.

He accounts for the result, not through the transplantation of any anatomical structure, but from the presence of a *virus*. "We can look upon caseating eruptive tubercularization and the little round nodules clustered in lymphatic cells as really belonging to tuberculosis when the matter inoculated from them produces tuberculosis; that is to say, when they themselves are the production of tubercular virus." This expression of opinion we regard as very unfortunate. We do have to speak of things as *virus*, and hitherto it has been confined in its use to explain conditions which were unknown, and as a convenient cloak to our ignorance. We have long spoken of the syphilitic virus, and the virus of a rattlesnake, but these expressions, if they mean anything, mean actual anatomical or similar entities, which we can handle, and which taken from known structure or morbid growths produce equally well-known anatomical results.

After speaking of the results of inoculation with a scrofulous gland, the author says: "We are consequently made aware of the close connection between these processes in spite of the difference of their anatomical genesis," and goes on to ask the question, "Would any one, because syphilitic caries is a different anatomical process from brain gummata and the eruption of psoriasis—would any one separate these things one from the other, and deny their connection one with the other?" We would.

answer, no; for the reason that these things can be shown to be the same by other methods than the gross external appearances. The bone gumma and the brain gumma agree in their histological characters, and these differ from each other and from the psoriasis or a syphilitic pustule only in so far as they are altered by the seat of their growth, or the tissue in which they develop. None of these are recognized to be of the same character, only by being derived from the same or similar initial lesion, or by producing the organic lesions of the same character when inoculated; their recognition depends on their histological characters. Cohnheim would not fail to recognize a bone or brain lesion due to syphilis, and would invariably differentiate them from tubercular disease. It seems to us weak to be prepared to class everything as tubercular, because, in the first place, no anatomical definition or delineation of the cells has as yet been found, and, in the second place, because various matters, both true tubercle, as acknowledged by all, and caseating material, thought by many or most others to be of different character, do, when inoculated, produce true tuberculosis.

It would seem much more justifiable to conclude that two things could by inoculation produce tubercle, since tubercle itself is, according to Cohnheim, not a definite anatomical entity, and can be produced by two other things equally indefinite. If tubercle were a morbid growth, such as carcinoma, this argument would not hold, and it would be difficult to escape from Cohnheim's conclusion. But we are dealing not with a definite anatomical entity, nor with a self-limited disease; it is rather a dyscrasia, and it is, therefore, not a difficult supposition that more than one factor or element may lead to its production. We think that an important fact has been overlooked in judging of this inoculation question which has not received the attention which it deserves. In all other inoculable diseases, living matter, or at least matter taken while in the living state, and most carefully preserved to be used fresh, is required, but in tubercular inoculations matter is used which, before the death of the patient, is dead anatomically, and has been so for indefinite periods before the post-mortem; even tissues preserved in alcohol are said to be efficient in communicating a living virus. Many suppositions can be made to account for the activity of this virus, but all require a greater faith than the plain straightforward statement that dead caseating matter, as well as fresh living tubercle, can reproduce tuberculosis in the inoculated subject.

It would seem as though the followers of this new doctrine had started out to find an anatomical entity, called tubercle, had failed to find it among the mazes which this dyscrasic change presents, and failing had recoiled into the old notions of Laennec, that every one of these processes was tubercular. This disease is not a morbid growth like carcinoma, it is not a self-limited or self-bounded disease like scarlet fever, and, therefore, we should not expect to find a particular cellular arrangement as in the one, or a contagion carrier, parasitic or otherwise, as in the other, for a disease like tubercle. We do not think we shall ever be gratified with seeing the "specific corpuscular elements," or the typical histological features of tubercle. In fact, we thought that almost every one had given up looking for specific cells in morbid growths, as well as in every other morbid change. We used to hear of cancer cells, but we never expected to be confronted with a *specific tubercle corpuscle*. We have rather passed beyond cells, since their form and size are dependent on so many purely accidental conditions, and reached the position where we regard all morbid

changes from the manner in which they are born, and live, and die. And we try to think of disease as a perversion of normal growth, an excess or deficiency of physiological action, and not as some new entity living and growing in the body, and introduced from without. In accordance with this prevailing thought of modern pathology, it would seem much more likely that tubercle—since we can find no definite anatomical characteristics for the shapes and forms which it invariably assumes—is a perversion of growth rather than a distinct new formation, and we can find no other meaning in the inoculation theory, or a virus. We say we can find no other meaning in the inoculation theory, except that it is intended to imply a direct transference of anatomical elements, which reproduce similar anatomical forms in their new position; it is either this, or else that any caseating matters are productive of the dyscrasia called tubercle.

The second chapter of Cohnheim's will be found very interesting to all who are convinced of the contagiousness of tubercle, and his illustrations of the mode of invasion of the organism are very apt. We do not think, however, that many can repress a smile when they read that the virus of a contagious disease, in cases of tuberculosis, "passes from the tubes into the peritoneum, in genital tuberculosis in the female;" or "that the poison gets access to the brain through the nostrils, and passes thence through the foramina of the ethmoid bone." Have we gone back to the days of the Greek and Arab fathers in medicine that we have to support a theory by such suppositions and the aid of inoculation experiments with caseating material?

In respect to primary tuberculosis of the bones, here is the explanation advanced: "Although in most cases the development of tuberculosis has been traced to injury, yet it is not to be supposed that it can beget the tubercular poison; and so far as I can see, the only conclusion to be arrived at is that the virus is already circulating in the blood, and that the inflammation resulting from the injury attracts the poison from the blood-vessels and makes it settle in the tissues." This would be very good reasoning if the existence of a virus were shown conclusively, but it is not proof. We do not think the reason is as good as the old one, that the inflammatory matter, resulting from injury—perhaps caseating, for all we know—leads to the perversion of growth and the formation of tubercle. How unlike the virus of other contagious diseases, it does not appear equal to producing the disease in the organism in which it resides, but is all potential for inoculation. If the poison is circulating in the system, but unlocalized, a patient must be capable of communicating it, but does not show its manifestation until the bone injury "attracts the poison from the bloodvessels and makes it settle in the tissues." This seems to us very much like saying a person may disseminate a disease before he has it himself. We shall begin to think that the old Griefswald staff-surgeon of Cohnheim's student days, which the author quotes, was right, "We are all more or less tubercular."

In chapter third, Cohnheim speaks particularly of acute miliary tuberculosis, and the difficulty in accounting for these outbursts of the disease. He alludes to the theory of Buhl that the anatomical basis of tuberculosis is a pre-existing caseating deposit, which forms the starting-point of the acute eruption, and says that this is of no value to those who regard the disease as a contagious malady, since they consider caseous deposits "as a part of the tuberculosis and a production of the same virus." How is it

with an inflammation at the appendix vermiformis resulting in an abscess and enlarged cheesy glands and subsequently development of miliary nodules throughout other organs? In these cases the miliary tubercle is most abundant in the peritoneum immediately surrounding the original disease. Does the author mean that the original inflammation was tuberculosis? Supposing the inflammation resulted from an injury, and it was only months or years subsequently that the enlarged glands of the part gave evidence of softening, and shortly after this event the eruption of miliary tubercle took place, do we need to introduce a supposed virus and a contagion to account for the result? In such cases, unlike the inoculation with caseous matter, the retrograde products of inflammation are introduced into the circulation by a process commencing and completed within the organism. In the inoculation experiments it is supposed that the caseating material contains a tubercular virus, but we think it is asking too much for us to believe that a perityphlitis is tubercular.

Local tuberculosis, which is also discussed in this chapter, does not favour a belief in the contagious theory, and the explanations offered by the author do not take away the difficulties in accepting this view. His comparison of tuberculosis to syphilis, as we have already said, is not a particularly happy one. Whatever may be the results of his experiments, he cannot mean to contend that syphilis is a contagious disease in the sense in which he thinks tuberculosis is contagious. No person would ever acquire syphilis by nursing or by breathing the same air as a syphilitic patient; no, not even if the patient had syphilitic disease of the lung. One does not acquire tuberculosis, nor syphilis, from living next house to a tubercular or syphilitic patient.

The whole question resolves itself into this, if the doctrine has any practical clinical value: that by such intimate relationship of two persons, the one nurse, the other patient suffering from tubercle, the healthy person receives into the lung, by inspiration, small particles of the tubercular matter detached from the diseased lung and expired by the patient. It is also claimed that besides the miliary deposits, other conditions of the lung, usually viewed as of inflammatory origin, have also the power of communication of the disease. In fact we believe it is not claimed that the miliary form of disease is contagious, but solely the latter stage of caseation. This power is supposed to depend on a virus of distinct and powerful kind, but tuberculosis, unlike every other contagious or communicable disease, does not, according to the terms of the new doctrine, ever produce such definite organic changes in the tissue which can from their histological structure be recognized and positively pronounced to be tubercle. As already quoted, Cohnheim says "there are no anatomical definitions to be found for tubercle and tuberculosis." Tubercle, therefore, is utterly dissimilar in this respect, according to Cohnheim, from every other known contagious or inoculable disease, at least of any of those about which a doubt of their contagious character can be entertained for a moment. Every other communicable disease has a definite anatomical lesion from which it takes its start, and is capable of reproducing the histological lesion. We do not believe that the independence, definiteness, and distinctness of a disease can be shown in fact, or maintained in theory, apart from its anatomical changes, gross or minute.

What is true of other diseases, we believe to be true of tubercle. We believe that tubercle has definite anatomical conditions, as definite as variola or syphilis. Whether tubercle can be communicated as typhoid

fever is, or as variola, or whether it is communicable as syphilis is, Cohnheim has not shown. His inoculation experiments have not shown. They have merely shown that both from introducing miliary nodules and also caseating material into different organisms, free from tubercle, tuberculosis is developed. If he was content to claim that tubercle (miliary nodules) produced by inoculation tubercle, its inoculable nature could be granted—in fact, it must be acknowledged if he were willing to recognize the tubercle producing and the tubercle produced as definite structures. This he denies to them.

We think he denies it very unjustly. No one fails to recognize, both from its gross, as well as its microscopic appearances, a meningeal tubercle or one in the peritoneum, and each of these resembles the other quite as much as carcinoma mammae does carcinoma of the liver. The great difficulty in this question of tubercle always has been, and appears to be equally so still with some, from the appearance presented by phthisical lungs. In the large or small cheesy masses, the infiltrated tubercle, so called, of Laennec, where nearly the whole area of the microscopic section presents a mere debris of lung tissues and granular and cellular elements, it is not to be expected that its original nature can be determined, but if tubercles are present anywhere in the lungs, there is usually enough lung or pleura not in a degenerated condition to afford samples of a fresh, well-defined tubercular growth or change. If tubercles are not found, the fair, common sense, straightforward conclusion to be drawn is that the disease is not tubercular. If they are present, it by no means proves that the cheesy masses are tubercular, or that they contain a tubercular virus, in the strict sense of this word. If the cheesy masses come first, the case is one of auto-inoculation, just as in the case of Cohnheim's and all other inoculation experiments. In both these latter supposed conditions, the presence in the body of a sufficient amount of caseating material leads to the development of tubercle. There is no need to suppose the presence of a virus or any contagion, unless we use the word in a loose popular sense; but these terms, applied in the manner suggested by the new doctrine, are strained, forced, and unnatural. Hence we say that our present meaning of contagion, and the boundaries between infection and contagion, stand very much in need of alteration before tuberculosis can be admitted among contagious diseases.

It cannot be contended for a moment that syphilis is a contagious disease in the sense which is intended by the new doctrine. Yet it is very possible to suppose that a fond and attentive nurse constantly bending over a patient suffering from syphilis of the lung might, by the inhalation of detached particles of the syphilitic disease, become syphilized; or if a large collection of material from chancre was made, pulverized and atomized for weeks and months in the presence of a number of people, possibly some of them would contract syphilis. If they did, the disease would have been derived from a definite anatomical lesion, and would reproduce one just as definite, both capable of diagnosis from definite histological character. If they did not contract syphilis, it is more than probable they would from bad air, etc., become affected with catarrhal pneumonia, which, in the course of time, would form cheesy masses in the lung. These cheesy masses by inoculation, so we are taught, produce tuberculosis in the lower animals. It would not be fair to conclude that syphilis in this roundabout manner leads to tuberculosis.

The remaining pages of the book are of original matter furnished by

Cullimore. After a few pages of preliminary remarks, which are quite interesting, but which in some of the conclusions drawn from them are not consequential, he passes first to the consideration of the histogenesis of the giant cell. The discussion of the giant cell in relation to tuberculosis has become very tiresome. We know of no sadder history than is furnished by a review of the various opinions on this subject. What a waste of valuable time has been made trying to read the nature of disease from the form of the cells instead of looking at the force which controls the activity of the component parts of the new formation! The author draws the correct inference in relation to this peculiar cell that its "presence or absence is of no particular importance, as helping us on the road to the discovery of the exact character of the tubercular virus;" but did he expect to see the virus in these cells?

He next speaks of the "test of tuberculosis founded on the results obtained by the introduction of the virus into the system." We have not yet alluded to the discrepancies and contradictory results obtained by different experimenters. Cohnheim is the only observer who asserts positively the invariableness of the result, but his translator seems to differ from him, and while acknowledging the contradiction, says they "do not affect the main question of the inoculability of the virus." It is evident how Cohnheim arrives at his positive assertion; he simply asserts that no material contains the virus that does not produce tuberculosis, and therefore using all sorts of material, the failures are called non-tubercular. Certainly such results should not be relied upon to prove the presence of a virus, especially when other observers, using material for inoculation which confessedly is not tubercular and can have no possible relation to it, such as bronchitic sputa and cheese, are able to produce a tubercular deposit. And when it comes to explaining these discrepancies by supposing, on the one hand, that the inoculated subject has already acquired the disease by previous contagion, and that the virus circulated in their vessels, and under the influence of the inoculation the virus left the vessels and settled in some organ; or, on the other hand, that the person from whom the bronchitic sputa was taken was subject to *latent* tuberculosis; with suppositions similar to these before us it becomes impossible to argue. Was the milk from which the cheese was made taken from a supposed tubercular cow which had as yet no manifested local disease?

At one time the supporters of the new doctrine argue for a small amount of virus in the blood, at another for a very large amount; it would seem, therefore, probable that a number of observations could be accumulated where the blood-containing virus was capable of producing tuberculosis by inoculation. However, we know of no such observations. In this chapter we next find considered some minor objection to contagious virus, and the question of food as a vehicle of contagion, all of which is well given, but which does not add any proof to the contagiousness of the disease.

The remaining portions of the work are devoted to the symptoms and etiology of consumption, and of acute miliary tuberculosis, and the prognosis in accordance with the teaching of the new doctrine. The third and fourth chapters refer to the question of treatment, especially in reference to climate, etc. etc., and the immunity of certain countries as compared with others from the disease. An appendix is given consisting of meteorological tables.

The other articles on the subject of the contagiousness of tubercle or

consumption, the titles of which head this review, have so recently appeared in this Journal, that it is not necessary to give any abstract of their contents. They all consider the subject from its clinical aspect, and adduce the proof from the opinions of practical physicians. Dr. Holden is particular to state that the question proposed is whether consumption is, without direct inoculation, communicable by one person to another, and Dr. Webb considers its inclusion in the zymotic group of diseases.

Dr. Holden states that "the real point being whether any septic material is eliminated from the body of a person suffering from necrobiotic changes in the lung, which, floating in the air or transferred by contact, may develop the same affection in another person," but we conceive that the question is something really very different in settling the question of contagiousness. The question which he states is a most important one, and no other one can possess a more vital interest so long as the mortality lists show so high a death-rate from this disease.

Let us see what Dr. Holden's point implies in relation to this question of contagiousness. His question is of *any* septic material floating in the air producing the same disease. What does he mean by "any septic material" and by "the same disease." The "any" must be identical with the "same" in order to show contagion. Smallpox is produced by septic material floating in the air, but the septic material is the same, and is—according to universal belief—derived from and identical with that derived from a previous case of smallpox. To prove the sameness of the septic material with the disease, namely, tubercle, inoculation-experiments have been appealed to. What is their answer? That tubercle can be developed by the introduction of true tubercle nodules, by caseating material, and by cheese.

We are ready to grant that any septic material—or almost any—does produce, when properly introduced, tubercle. We know of no experiments which show that it, viz., caseating material, produces anything else but the small miliary nodules; the experiments, we believe, have not been claimed as showing that they can develop catarrhal pneumonia or other necrobiotic lung changes, and it is very certain that such changes occur in animals not inoculated but housed in a similar manner to those subjected to the experiments. We do not think, therefore, that the essential sameness has been shown. We do not wish to cavil with words, but suppose any one should say that bricks, from a falling building, flying through the air came in contact with a person's head and produced a fracture of skull, and any one else showed that the fall of decaying trees in a forest did the same: the necrobiotic changes are evident in both cases, and the fractured skull is the same; yet there is a want of sameness between cause and effect. It is not claimed that fractured skulls are contagious, although there is a very evident diseased condition perceptible in the skull, and this condition was brought about by a diseased condition of the house and of the tree. The want of likeness between the diseased thing producing and the diseased thing produced is in this illustration very evident, and want of likeness is to us equally evident in the destruction of the lung, called phthisis. In the first place, no one believes that all cases of consumption are due to contagion in the sense intended by the new doctrine. Secondly, it can be shown that the conditions anatomically viewed are not identical, and Cohnheim, as already quoted, expressly denies any definite anatomical criterion. In all other contagious diseases identity of anatomical forms is very clear, for example, variola; in other cases where

no very marked anatomical change can be found post-mortem, the symptoms, course, results, etc., are so definitely uniform, and so accurately reproduced, that there is no longer any question of identity. How different is it with phthisis!

Among the later papers which have appeared on this subject, we wish to call attention to one by Dr. Whitney on "The Inoculability of Tuberculosis," which is to be found in the *Boston Medical and Surgical Journal* for July 28, 1881. It is an exceedingly clever paper, and covers very completely the pathology and bibliography of the subject from the beginning to the present date. He considers the three-fold aspects of the question, viz., the inoculation experiments, the food, and from inhalations.

It is with the scientific aspect of the question that we have mostly dealt, rather than the two latter and more practical and every day points, and we believe that this is the proper point from which the subject should be viewed.

Unquestionably the subject from the first point of view is not by any means a settled one; in fact, whether it will ever be settled with unanimity is, we think, doubtful. Some one will be found, as has continually been the case during the past half century, who is ready to introduce some immature but plausible supposition to disturb the professional mind.

What we think is more important to settle than the absolute correctness of the inoculation experiments, is what we intend to prove by them, granting their correctness. And in considering the contagiousness of tuberculosis, we want to settle if we mean that infectiousness is the same thing as contagiousness. It does not make a very great difference whether it is or is not; but settled definitely one way or the other it must be. And next, are we to consider the question proved for or against contagiousness (or infectiousness), if a varying lot of matters produce by inoculation tubercle. It seems to us that success with one small piece of cheese in producing tubercle spoils the whole attempt at proof. There is no longer a like producing a like; it is various unlikes always followed by the same like. It would be in some sort a confirmation of Cohnheim's peculiar view if occasionally the various unlike substances used in inoculation were followed by the production of unlike results—say, for example, a miliary nodule caused a caseous pneumonia, or if cheese at one time caused miliary nodules, and at another catarrhal pneumonia.

Whatever objections are offered to the inoculation experiments, or however much doubt may be thrown on their evidence, we cannot question the importance of the dangers involved to individuals of becoming tubercular by means of food derived from tubercular animals, and by the inhalation of breath or of particles expelled from the lungs of tubercular patients. It is claimed that the disease is communicated by this means, and it may be that it is more frequently communicated than we are in general aware. The evidence of it in respect to food is not very abundant as yet, and in respect to inhalation, it partakes of that general nature which does not rise above the grade of possibility, or even, let us say, probability. It must be remembered, however, that the communication of the disease by both these means is comparatively a new investigation, difficult to carry out with exactness, and from which in time more positive data will become available.

The discussion of the communicability of the disease by means of food, especially to infants and children by milk, seems a much simpler and easier

question than that by inhalation or direct contagion or communicability from person to person, because with animals the carcasses and the pathological alterations are ever ready to our hand for examination, and it can at once be settled whether the milk-furnishing animal is the bearer of a true tuberculosis, or is afflicted with a catarrhal pneumonia or some other pathological process. Let us be careful to bear in mind that because the milk from a *sick* cow is fed to an infant, who subsequently becomes tubercular, that it is not a proof that tuberculosis is contagious.

The same criticism must be applied to the communication of this disease from patient to nurse. It would seem, from the records furnished by at least two of these papers of which we have spoken, that both at present and in past times, a very considerable number of men have viewed with awe and dreaded the possibility of a consumptive communicating the disease to healthy persons who were in contact with them. But how much does this opinion prove?

With every desire to believe the evidence in a matter of so great importance, we must still insist on the great difficulty there is in showing the true sequence of cause and effect; in other words, to determine with accuracy when the *post hoc* becomes a true *propter hoc*. If contagion or infection from external sources were regarded as the sole cause of tuberculosis, the decision of the question would immediately become a comparatively simple one; but the most enthusiastic advocate of the contagion theory does not claim that this is the only means of its communication, and fully recognizes that many cases of tuberculosis originate *de novo*, and by what we may call self-infection or self-inoculation.

So long, therefore, as the double source of origination is spoken of, the results of contagion would always necessarily be regarded as most doubtful of belief. Granting for the sake of the argument that a patient suffering from a destructive disease of the lung does cause, as the result of close contact, a similar condition of the lung in a healthy person, what is proved by it?

Very certainly that the two persons ought to have kept farther apart. But does it prove contagiousness? No; and the inoculation experiments answer the question also in the negative, by showing that almost any foreign matter introduced into the organism is capable of producing genuine tubercle and tuberculosis. It is strange that the phthisical patient never communicates tubercular meningitis or peritonitis to the nurse, or that general tuberculosis, of other organs than the lung—conditions, therefore, in which the blood must be surcharged with *virus*, if any exists—does not propagate similar diseased conditions.

The natural objection which the advocate of the contagion theory may interpose in cases where the diseased spot does not obtain free communication with the channel of its transportation, as in lung disease, is quite unreasonable. A disease which is contagious, and has a virus, is certainly a blood disease, *i. e.*, the virus itself must be circulating in the blood, and therefore carried freely to the air by means of the lung, as well as by other secretory and excrementory channels. To deny this, and to claim that tubercle is only contagious when seated in the lung, is at once to dethrone it from its position as a contagious disease, and to make it a purely local matter. To claim that it is communicable only when seated in the lung, introduces the doubtful element of the possibility that the air from the breaking-down lung carried, not a virus, but just such matters as we

know from experiment are capable of inducing tuberculosis,—matters which are themselves not tubercle, but merely disorganized products.

Again, granting that a person suffering from destructive disease of the lung does, by means of inhalations or other contact, induce genuine tubercle in another, what is it necessary to show before contagion is proved? In the *first* place, that the disease in the contagion-giver was identical with that of the receiver. It ought to be shown that the two have a closer resemblance than merely the power to destroy the lung tissues. To show the lung broken down in one case and genuine tubercle in the other does not prove the *contagiousness* of tuberculosis. No one except those who advocate the contagion theory disbelieves in an anatomical structure by which tubercle can be recognized. Colnheim apparently disbelieves in an anatomical structure because matters other than those universally recognized as tubercular do, when inoculated, show a power of producing true tubercle. This argument is very much like a circle, and then finally begging the question. *Secondly*. To prove contagiousness, it must be shown that disease, as occurring in the receiver, was not an accidental catarrhal inflammation, which has, as we know, a power of auto-inoculation.

Finally, the only other case to be supposed is that of a nurse acquiring catarrhal pneumonia from contact with a chronic catarrhal pneumonia patient. We believe no one claims that catarrhal pneumonia is contagious. M. L.

NOTE.—The following are the latest reported investigations of the subject of the communicability of tuberculosis:—

M. Toussaint reported to the Academy of Sciences in August last on the results of his experiments in producing tuberculosis with lymph taken from “a cow in an advanced stage of tuberculosis.” Toussaint’s account mostly relates to the existence of a tuberculous microbion and to its artificial cultivation.

Krishaber and Dieulafoy have been repeating the usual inoculation experiments with monkeys “as being the animals which the nearest approach to man,” and show a very large proportion of successful results in producing tubercular lesions. These observers claim that the “tubercular granulations prove most rapidly transmissible, while the pulmonary parenchyma was less infectant.” Their communication was addressed to the Académie de Médecine last August.

ART. XXIV.—*Die Actinomykose des Menschen, eine neue Infectiouskrankheit auf vergleichend-pathologischer und experimenteller Grundlage geschildert.* Von Dr. E. POFICK. Mit 6 Tafeln. Berlin, 1882: pp. 132.

Human Actinomycosis. The Description of a new Infective Disease based upon Comparative Pathological and Experimental Study. By Dr. E. POFICK. 6 plates. Berlin, 1882: pp. 132.

At the recent twenty-fifth anniversary of Virchow’s professional residence at Berlin, many of his distinguished pupils and assistants gathered together for the purpose of paying him their respects and congratulations. They then presented to him renewed proofs of their scientific and intellectual activity in the form of original articles relating to some subject in medicine towards which their attention had been directed in consequence

of his teachings. Such work is likely to have been accomplished despite the anniversary, but its completion at a given time is to be regarded as due to the powerful stimulus of the occasion. One of the articles then offered is now before us in the form of a monograph, which is destined to excite a deep interest in the medical world from its immediate importance, and the novelty of its subject. Its general bearings are no less interesting than its practical tendencies, and it presents an elaborate and comprehensive picture of what has thus far been a collection of single and somewhat limited views from various standpoints.

Within the past few years the German journals have contained brief communications and notices concerning a disease common to cattle and man, which had hitherto not been recognized as a distinct affection. It has acquired special importance from its severity and comparative frequency, as well as from the relation it presents to the activity of minute fungi whose presence is found to be intimately connected with the origin and dissemination of the disease.

In 1877 Bollinger of Munich published his discovery that a curious affection of the jaw-bones of beef-cattle, heretofore looked upon as scrofulous or sarcomatous, was intimately connected with and apparently due to the presence of a vegetable organism. This organism was examined by Harz, and, at his suggestion, received the name of actinomyces—radiating fungus—from its peculiar appearance.

The disease was characterized by the presence of soft, juicy, nodulated or lobulated tumours, of the size of a child's head even, growing from the alveolar processes of the molar teeth, or the spongy portion of the upper and lower maxillary bones. As these tumours increased in size they projected on the one side or the other, destroying all the normal tissues interfering with their growth. They were of a whitish colour on section, and presented a large number of yellow spots, resembling abscesses. The latter contained peculiar sulphur-yellow bodies of the size of hemp-seed, with a greasy feel. The structure of the tumour was composed of a granulation-tissue, while the yellow bodies consisted of a meshwork of innumerable branching threads with knobbed ends, the actinomyces. As these fungi were constantly associated with the tumours, not only of the jaw-bone, but with others in the tongue, pharynx, larynx, stomach, and adjacent lymphatic glands, and were regarded as the cause of the tumours, the term actinomycosis was given to the disease.

Ponfick was early enabled to confirm these observations of Bollinger as applying to cattle in Hanover and Silesia, and found that the disease frequently occurred in the vicinity of Göttingen.

In the year following the announcement of the discovery of this affection in cattle James Israel of Berlin published in Virehow's *Archiv* an account of two cases of a peculiar mycosis occurring in man, one of which terminated fatally. A notable feature in both was the presence of abscesses, in which were yellow granules composed of fungi. The patient who died was treated in the surgical ward of the Jewish Hospital, and was regarded as suffering from chronic pyæmia. Israel's paper contains an extended account of the appearances of the fungus, which, in certain respects, was considered to resemble the *Streptothrix Forsterii*. He advanced the opinion that in one of the instances the fungus made its way from a carious tooth into a resulting abscess, and thence was continued into the lymphatic vessels. The peculiar contents of these abscesses were shown to Langenbeck, who stated that he had met with a similar experience in 1845, and

had ascribed them to a peculiar fungus. From his notes and drawings, made at the time, it was obvious that his case was identical with those reported by Israel.

Early in 1879, Ponfick, then in Breslau, made the post-mortem examination of a man who had been treated for some time for a chronic pulmonary affection. He finally suffered from a phlegmonous inflammation in the vicinity of the pleura, which opened externally in the infra-spinous region and elsewhere in the back. Numerous fistulae were present in which were found peculiar clumps of fungi, which he identified with those he had observed in the actinomycosis of cattle. Fully appreciating the importance of this observation he at once reported the case before the Surgical Congress, then in session at Berlin, and illustrated his report with specimens. He also maintained that the cases of Langenbeck and Israel above mentioned were not peculiar pyæmic affections, as claimed by the latter, but were identical with his own, and were all to be regarded as due to the presence and growth of the actinomyces.

Similar cases were speedily observed and reported in Germany by Israel, Ponfick, Rosenbach, and Partsch. Sixteen cases, eight of which were fatal, are tabulated in the work now in review; and still another has recently been reported by Weigert.

Notwithstanding Langenbeck and Israel first described examples of this disease occurring in man, Ponfick deserves the credit of fully identifying the affection with that met with in cattle, and of making the first public announcement of this fact. It is to him that the establishment of the human actinomycosis is due, and in his monograph the results of his observations and studies are presented. We find here not only a detailed account of the five cases observed by the author, but also the results of his study of this affection in cattle. It appears that the disease has long been known to occur frequently in different parts of Germany and in other countries, especially in Italy. He considers that, under what has commonly been called farcy or bone-distemper (*wurm*—*knochen wurm*), there are included not only instances of actual farcy, of scrofula and sarcoma, but also those of actinomycosis. He further regards it highly probable that the latter disease is likely to represent some of the cases of farcy or glanders in man.

The frequent occurrence of the disease in cattle gave Ponfick numerous opportunities and obvious advantages in its study. The various stages could be obtained at will, and both tissues and fungus could be examined in the freshest possible condition. He was enabled to discover that the internal organs of cattle might be affected, as was the case in man, and in the course of his investigations he learned that swine as well as neat-cattle might suffer.

The chief advantage, however, from the study of this disease in animals, lay in the opportunity afforded for experiments with reference to the possibility of transmission, and the search for channels through which such might be accomplished. A very detailed account of the results of these observations and experiments is given, but it obviously far transcends the limits of a brief review to enter into the minutiae of such studies. It is undoubtedly preferable to call attention to their having been made with all the accuracy and completeness which characterize the stand-point of experimental pathology at the present day. The author's reputation is so well established, and his character so well known that there can be no question of the thoroughness of his work and the truth of his statements.

Without claiming the possession of any special training as a mycologist, Ponfick has devoted a great deal of skilled talent as microscopist and experimenter with reference to the structure and manner of growth of the actinomycetes. With the critical employment of the various methods used in histological investigation, he has described and delineated, with the utmost attention to detail, the various appearances presented by the fungi. His observations control and generally corroborate those of Harz, whose studies of the structure of this organism are received as the only contribution in this direction of an expert. At the same time Ponfick has submitted the results of his observations to the judgment of eminent botanists, and states that they and Harz agree that the growth in question is a fungus, and probably a mould. Its form, however, differs so widely from that of all other known fungi that it is, at present, impossible to include it in any of the existing varieties. Even the attempts at cultivation throw but little light on its classification. Harz infers from his studies in this direction, and the microscopical appearances of the plant, that it represents a stage in the development of a higher fungus. Nevertheless, he admits that the historical development of the latter is not yet determined, although it is considered that such a fungus may be closely allied to, or even identical with, some known variety.

Ponfick's experiments in cultivation were made in various animal and vegetable soils, including the use of gelatine as recommended by Koch. He observed numerous appearances, which would assist in building up the biological history of the plant in question. He, too, finds that all the links in the chain are not present, and he therefore hesitates in adding another to the views already advanced by Harz, Israel, and Johne. He calls attention, however, to certain appearances, seen by himself and other investigators, which may be of value in future studies. These consist chiefly in resemblances to well-known fungi, and to the presence of fungi in lachrymal concretions and in the crypts of the tonsils of man and of swine, which bear a close likeness to the actinomycetes, and suggest transitional forms.

Although the botanical position of the actinomycetes and its relation to known fungi are still to be determined, the experiments with regard to the pathogenic properties of the organism were far more positive. Ponfick maintains that wherever, in this disease, the characteristic products of the new formation are present, whether as purulent inflammation, granulation tissue, or tumours, they are always accompanied and actually produced by the presence of these bodies. The disease progresses as the organisms grow and propagate.

The association of the diseased conditions and the fungus suggests such a view, but the experiments in inoculation, made independently by Johne and Ponfick, prove it to be true. Ponfick's early experiments were made on dogs and rabbits, and were uniformly negative. Experiments made on cattle, however, showed that when tissues containing the fungi, or, as Johne found, the isolated fungi, were transferred from diseased to healthy animals, either into the subcutaneous tissues, the abdominal cavity, or the bloodvessels, an independent growth of young, typical tumours, containing the fungus in an active state, arises in the course of one or more months.

In the clinical history of mild cases of actinomycosis in man there first appears the gradual development of a more and more distinctly fluctuating swelling, usually near the angle of the lower jaw. After some weeks or months the swelling commonly extends downwards along the sterno-mastoid

muscle rather as a growth than a gravitation, and frequently presents a nodulated character, suggesting enlarged lymphatic glands. When this growth is cut into it appears as a spongy, flabby granulation-tissue, from which a few drops of thin, pale, serous-like fluid may be squeezed on repeated pressure. In this fluid are found the peculiar sulphur-yellow granules, whose presence is pathognomonic of the disease. During the progress of the swelling there are no local or general symptoms, neither chills nor fever.

In cases terminating fatally the disease pursues a more protracted course, extending over months or years.

Although a painful swelling of the jaw may be the earliest symptom, most of the fatal cases began with signs of a left-sided pleural irritation. The pains might subside, but would recur with increasing severity, and were finally associated with decided inflammatory characteristics. The inflammation affects the lung and pleura, or is manifested by cold abscesses opening externally, and communicating with each other subcutaneously by numerous branching fistulæ and sinuses. These fistulæ present irregular external openings, surrounded by a border of flabby, livid, pointed bits of skin, and are continued into a labyrinth of canals, extensively invading the soft parts. The fistulæ and canals are lined with pale, soft, and flabby granulations, sprinkled with yellowish-white spots. They are associated with a costal or spinal caries, and the latter may be suggested by the presence of a psoas abscess. Every chronic suppuration, therefore, in the left lower dorsal and pelvic regions is to be looked upon as the possible result of an actinomycosis. Even in the chronic cases the absence of fever is notable, although rare attacks of high fever may exist when a pleurisy, pericarditis, or peritonitis arises. These inflammations are circumscribed, however, and soon subside. With advancing emaciation and exhaustion, no relief following the external openings, the patient eventually falls into a condition of fatal marasmus, which may be accompanied by amyloid degeneration and dropsy.

The disease advances continuously into adjoining parts, and invades the bones at the base of the skull, as well as follows the course of nerves, even as far as the brain. In its course downwards the spine and ribs may become involved, also the larynx, œsophagus, lungs, diaphragm, spleen, left kidney, and left lobe of the liver. It is probable that the disease may also be disseminated in other ways; through embolism, for instance, the growth having been found penetrating a vein, and nodules being observed in the walls of the heart and in other remote organs of the body. It is likewise probable that the inhalation of particles into the bronchi may occasion the formation of tumours in the lungs. In the several metastases the fungus is found, and the nodules resemble in their gross appearance the visceral gummata, resulting from syphilis.

The evidence relating to the method of origin of this disease is in favour of its being intimately connected with vegetable food, as carnivora are exempt, and the earliest symptoms, in mild cases at least, are observed in the immediate vicinity of the mouth. Jolme has frequently found bits of food coated with actinomyces in the tonsils of swine. This fact is of less value in etiology, as but few cases among swine are thus far reported, while in the numerous cases among cattle the fungus has not been found in the tonsils or teeth.

The view that the mouth is the most frequent channel for the admission of the fungus is supported by the occasional presence in the tonsils of

healthy individuals of peculiar clumps, suspected to be early stages of the growth. The discovery of the fungus in carious teeth, already referred to, gives additional evidence in favour of the introduction of the disease by the mouth.

At the same time another factor than the presence of the fungus is also necessary, for the latter may be present and the individual be healthy, while the patient may be diseased, although the teeth and tonsils are free from the organism. This second factor, to which Ponfick calls attention, is a lesion of continuity. An opportunity being thus afforded for the entrance of the fungus into the tissue, its growth may be continued, as in the experiments on cattle above referred to. It is quite possible that the organism may be admitted from other parts of the surface of the body than the mouth; for one case is recorded where the disease apparently arose from a wound of the thumb. This view is further supported by the prevailing belief among veterinary surgeons that farcy buds occasionally grow from without inwards; the contagium in such cases is presumably inoculated into tissues laid bare by frequent or violent rubbings of the animal against its stall.

There is no evidence, thus far obtained, which suggests a transmission of the disease from animal to man, or from man to man. That such a transfer is not impossible is manifest from the experiments on animals.

It is obvious that the prognosis of this affection is dependent on the extent of the invasion of the deeper tissues. Relatively favourable so long as it is limited to those parts accessible to the surgeon's knife, it becomes the more unfavourable the further in the advance. When the bones and the deeper parts of the neck are reached, the prognosis becomes fatal.

The treatment is based essentially upon what has been stated with reference to the cause, its probable origin, and its evident means of approach to the various parts of the body. Preventive measures can accomplish but little till more is known with regard to the home and life of the fungus outside the animal tissue, and with regard to those conditions outside the body which favour its growth and propagation.

Now that the disease is known to be frequent among cattle, and a rapidly increasing foe to man, it behooves all physicians to bear its existence in mind, and to familiarize themselves with its features. From the history of its prevalence in certain parts of Europe, it is more than probable that, especially in those sections of this country where cattle abound and represent the chief industry, the actinomycosis of man and of cattle may become prominent as a distinct disease to be recognized and to be overcome.

R. H. F.

ART. XXV.—*Eczema and its Management. A Practical Treatise based on the Study of Two Thousand Five Hundred Cases of the Disease.* By L. DUNCAN BULKLEY, A.M., M.D., Attending Physician for Skin and Venereal Diseases at the New York Hospital, etc. etc. New York: G. P. Putnam's Sons, 1881.

TREATISES and monographs upon diseases of the skin have of late become conspicuous in the list of American medical literature. Derma-

tology, as a worthy specialty of general medicine, has been pushed forward with much zeal during the last decade by a number of able observers in different parts of our country; as a result of which we find the subject justly taking its place by the side of gynecology, ophthalmology, and other specialties. It is not too much to say that in no department of medicine has more good work been done and greater progress in pathology and therapeutics been made than in diseases of the skin. The advances have, indeed, been remarkable. In proof of this statement, we have to offer such admirable volumes as the one under consideration, which reflects credit alike on the author, the profession, and medical literature. It is in the production of works of this kind—able monographs, rather than general treatises—that our knowledge of special diseases is really enhanced. Treatises and systems at the best can give but a general idea of the subject. It is to elaborated articles and to brochures that we must look for personal experience, for unusual or rare forms of disease, and for detail—material, as an author soon finds out, too bulky to be included in the ordinary-sized volumes of the day.

The author of the work before us is well known as one of the most active and prominent dermatologists of our country, whose large experience entitles his opinions to respect and careful attention. As a writer, Dr. Bulkley is equally widely known; his contributions, for the most part of a practical character, having been numerous. The aim of the author, as stated in the preface, has been to present the general practitioner with as clear a guide as possible to the recognition and management of eczema. The book is made up largely of personal experience, there being but few allusions to the opinions and statements of other writers, although in a general way the author acknowledges the assistance derived from the prominent writers of the day.

Eczema is defined "as a non-contagious inflammatory disease of the skin, of constitutional origin, acute or chronic in character, manifesting many or all the results of inflammation at once or in succession, and accompanied by burning or itching." Owing to the multiform and protean character of the disease, its definition becomes a difficult problem; one which has never been solved to the satisfaction of all, and probably never will be. Much depends upon the stand-point of the observer, whether this be clinical, etiological, pathological, or a combination of several or of all. The definition given by Dr. Bulkley strikes us as being too broad to convey a clear idea of the disease to the reader, supposing that he had never seen a case of eczema. We doubt whether he would be able to make the diagnosis. The usual primary lesions, which are tolerably constant, are ignored; nor does there occur any reference to the pathognomonic feature of infiltration, which it seems to us is such a characteristic symptom as to be worthy of special mention. The words "manifesting any or all the results of inflammation at once or in succession," while in the main true, are not strictly so; for from this it would appear that eczema was capable of manifesting itself in the form of any other disease of the skin; as, for example, erythema multiforme, herpes, or pemphigus. In the present state of our knowledge it does not seem wise to totally ignore the old landmarks, the primary and secondary lesions, without which definitions of skin disease would be too vague to be of practical value. That the author, however, is fully cognizant of the lesions and the course of the disease, is shown by the following *résumé* of the process:—

"The earliest local phenomena being nerve and capillary disturbance, the process may remain in the erythematous stage, and the skin lesion be aborted, as far as relates to its active increase, and the threatened eruption subside without further advance. Or the capillary dilatation may continue, a certain amount of fluid may transude and become organized, and the chronic erythematous eczema result. Or, there may occur so much exudation that vesicles are formed, and when these rupture a peculiar glairy fluid exudes, which stiffens linen, and tends to dry into scales and crusts. If the inflammation is less active, only papules are formed. In the more chronic cases the exuded fluid does not reach the surface, but is retained in the meshes of the skin, and, becoming organized, constitutes what is known as the infiltration or thickening of eczema, which may then crack and give fresh distress."

The picture gives a good idea in a condensed form of what may be termed the clinical pathology of the disease.

A point of much importance, it has always seemed to us, is the differentiation of eczema from other cutaneous inflammations resembling in the character of the lesions this disease. Eczema we have always held to be a disease *sui generis*. Simple inflammations of the skin, tending to spontaneous recovery, are likewise to be viewed as having a history of their own. Upon this subject the author speaks clearly and wisely when he says:—

"It is also to be remembered that although eczema differs from ordinary inflammation of the skin, or dermatitis excited by local irritants, it is often very difficult to distinguish between the two early in the attack. Pediculi upon the scalp give rise to an irritation which induces scratching, and an artificial eruption is then set up, composed of pustules and raw points covered with crusts, which often closely resembles a pustular eczema of the scalp. *But the former eruption is not eczema, it is simply a dermatitis depending wholly on the local cause of the pediculi, and disappearing entirely when they are removed.* The same is true in regard to eruptions caused by body lice and pediculi pubis, also of the eruptions seen in scabies. Other agencies may likewise cause inflammation of the skin which may closely resemble that of eczema; such are heat and cold, animal poisons; also such vegetable matters as croton oil, savin, poison ivy, and arnica, together with mineral substances, as tartar emetic, aniline dyes, etc. Although these eruptions are not eczema, *they may become the starting-point of true eczema*, which may then remain, and relapse again and again without recognizable local cause. Eczema, then, is not purely a local disease of the skin, but is a state or condition of the system of which the skin lesions are the outward manifestations, as joint inflammation is one of the indications of the gouty state."

The italics are our own, and have been used because we desire to bring forward those views of the author which we regard as most important and as correct. As is well known, they are quite at variance with those of the majority of German pathologists, who consider all of the several manifestations cited as eczema. That the two affections are often complicated, no one would deny, but that every inflammation accompanied by fluid or plastic exudation caused by local irritation is an eczema, cannot be accepted. Close clinical observation will never, we think, establish this, and upon this ground we are pleased to find Dr. Bulkley taking a firm stand.

Concerning the frequency of eczema, the author's statistics, founded upon experience in New York, seem to agree closely with those of Wilson in London and of Anderson in Glasgow. In a total of 7300 cases of miscellaneous skin diseases there were 2500 cases of eczema, or a percentage of 34½. In the author's experience, the percentage in dispensary and in private practice is nearly the same. The disease may therefore be re-

garded as forming about one-third of all cases of skin disease encountered. The frequency of the disease varies, however, in different countries, and moreover in different cities of the same country. Thus we would venture the opinion that the proportion of eczema to other diseases of the skin is greater in Philadelphia than in New York.

The author considers the etiology of the disease very fully, and, we think, satisfactorily. In this connection it may be stated that he has very little belief in the heredity of eczema as a disease, although the habit or condition which predisposes thereto, namely, the gouty, strumous, and nervous states, may be and undoubtedly are transmitted. According to his experience, but a very small proportion of the cases, even in the higher ranks of private practice, show any strong evidence as to the heredity of the disease to any degree.

We next encounter a chapter devoted to the symptoms of the disease and its pathological anatomy. The symptoms are arranged under six heads, considered, as he states, in the order of their importance, which, he adds, happens to be also the order of their pathological sequence. They are: (1) itching; (2) redness from congestion; (3) papules, vesicles, pustules, or exudation; (4) crusting, or scaling; (5) infiltration, or thickening; (6) fissures, or cracks. Upon the subject of the pathological anatomy of the disease, our knowledge, we think, has been advanced but little of late years, notwithstanding that researches have been carried on by numerous observers. Dr. Bulkley gives a full *résumé* of this question, but does not contribute any original studies. The microscope as yet fails to show the distinction in the tissues between eczema and other forms of similar inflammation.

The nature of the disease is next ably considered, the author at the outset expressing himself strongly in favour of its constitutional origin. He adds, very justly, that the local pathology of eczema has rested largely on three grounds: first, on the results obtained in its local treatment; secondly, upon microscopical researches in histology; and, thirdly, on a clinical and microscopical study of the artificial eruptions produced by irritants, as, for example, croton oil. This question has already been touched upon in the review, and, interesting as it is, we cannot further dwell upon it, but beg to commend its consideration to the reader. We entirely agree with the author when he says that great error is committed by those who look only or mainly at the local causes, and argue therefrom a local nature for the disease, forgetting the established principles in general medicine in regard to predisposing and exciting causes. The impossibility of producing eczema artificially in a person not subject to the disease, is well known, and we think offers proof of the author's position on this point.

Decidedly the most interesting, original, and valuable portion of the book, is that about to be referred to on the causes of the diseases. They are considered appropriately under the two heads of predisposing and exciting causes. And here it may be stated, that although commending the chapter as a whole, there are many questions upon which we think the author expresses himself too positively. Thus, the observation that "careful and repeated study of patients with eczema will always reveal that they are not in perfect health," is one which would by no means be accepted by the profession. That they are not infrequently in a state of deranged general health no one would probably deny, but that such is always the case seems an unnecessarily positive assertion. The subject

certainly admits of discussion. Again, the author considers the state of the circulation to be frequently deranged. He says:—

“The pulse of patients with eczema rarely represents that of health, and may be variously abnormal. It may be very sluggish in those of a bilious state, and I have observed it below fifty in the minute, rising to normal frequency when this condition was removed. Far more frequently it is found to be unnaturally frequent, and may range very high from debility or neurasthenia, gradually returning to a standard of health under the treatment which cures the eczema. It is almost always weaker and more compressible than in perfect health, although occasionally, in apparently robust subjects, especially in more acute cases, it may seem to be full, and may even be throbbing. In these latter cases this is found to be the result of an unnatural heart stimulation by an overloading of the circulation with effete products, resulting from imperfect assimilation and disintegration.”

We have quoted the author at length, because the views expressed are strikingly novel, and we think may be challenged. To bring forward such views, which, it need scarcely be remarked, are altogether at variance with the observations of other dermatologists, without full explanation, seems to us to be courting severe criticism. It would certainly have been interesting had the topic been discussed, with statistics, and with the forms of the disease in which are found circulatory disturbances. For we cannot think that the statement applies to all forms and varieties of eczema.

According to the author, three classes of subjects present themselves with eczema: first, those with the gouty state; secondly, those exhibiting some of the elements grouped under serofula or struma; and thirdly, those manifesting symptoms referable to the nervous system, constituting the neurotic state. It is, however, by no means asserted that sharp lines separate these groups; on the contrary, they frequently merge, while some cases are with difficulty placed. The value of recognizing these three states rests on the practical basis of therapeutics and prophylaxis. The “gouty state” in eczema next receives attention, and is fully explained, the remarks being, on the whole, judicious and characterized by close clinical observation and by valuable suggestions.

In looking over the chapter devoted to the treatment of the disease, certain points strike the attention, to some of which we may refer. The remarks upon the value of arsenic, a remedy assuredly much abused through thoughtless administration, are clear and conservative. Its high repute in the treatment of the disease is endorsed, although, as stated, it is by no means to be given in every case; the author adds that in his practice it is not used in probably more than one-half of the number of cases treated. “As a modifier of cutaneous nutrition, it is often of value in chronic cases, but used alone and indiscriminately, it may often do harm.” The last words, we feel, might be italicized. Caution is given against the employment of the remedy in acute eczema, and further, that its administration should even be suspended during an exacerbation in the treatment of the chronic stage of the disease. It is further stated that the remedy is well borne by children, and instances are quoted where the treatment consisted solely of arsenic in increasing doses, beginning with one drop of Fowler’s solution, until two, three, or even ten drops were taken three daily.

“Under this plan the eruption quickly paled in these cases, and soon ceased, with little or no local treatment, and with few, if any, dietetic or hygienic direc-

tions. But I have never felt it wise to recommend this plan, or to practise it very largely, for fear of possible evil results from the free use of so powerful a remedy."

It would have been a valuable contribution to our knowledge of the action of arsenic, if the author had stated precisely what, if any, "evil results" he had encountered. The failures of the remedy in infantile eczema, it may be said, are also briefly referred to.

The chapter on infantile eczema will amply repay perusal and study. In considering the subject of ointments, he expresses the opinion that oxide of zinc ointment and tar ointment are both much too strong in the eczemas of children, and should, therefore, be weakened. Sixty or even thirty grains of oxide of zinc to the ounce, and tar ointment weakened with three or six times of simple ointment, he considers more valuable. We are surprised to hear that "lotions are very little used in infantile eczema;" their value we hold is great in certain stages of the disease, both as antipruritic and as curative remedies. The author seems to regard them as being chiefly useful for the purpose of relieving the itching. The directions for the use of water are admirable, comprising sound advice. As a rule, the less washing the better. When washing is practised, the ointment should be applied immediately afterwards. The value of the mercurial ointments is referred to, preference being given to the ointment of the red oxide, weakened with three times its quantity or more of simple ointment. Nothing is said of the value of calomel, which is so highly esteemed by many; nor of white precipitate, likewise looked upon by some as a sovereign remedy.

The chapter on differential diagnosis we regard as the weakest in the volume. Many diseases which, at times, closely simulate eczema, are, it is true, referred to, but so briefly that the picture is by no means graphic. Thus, the differences between impetigo, impetigo contagiosa, herpes, tinea favosa, lichen ruber, and eczema are unsatisfactory. Other instances might be cited, as, for example, dermatitis exfoliativa, pompholyx, and dysidrosis, diseases liable to be confounded with eczema. The description of universal eczema is likewise meagre.

We have thus endeavoured to bring forward some of the principal points contained in the volume. The subject-matter is presented in an easy style of writing, but assuredly it might be much condensed, there being in many places a good deal of unnecessary repetition. The book is singularly free of quotations, Hebra being about the only author who receives full credit for his work. This we regard as an error of judgment on the part of the author, for there has been excellent special work done of late by dermatologists in this country and abroad, which, in a comprehensive treatise like the present, is entitled to the heartiest recognition. It is, however, on the whole, an admirable treatise on the subject, and can be cordially recommended to the general practitioner.

L. A. D.

ART. XXVI.—*The Science and Art of Midwifery*. By WILLIAM THOMPSON LUSK, A.M., M.D., Professor of Obstetrics and Diseases of Women and Children in the Bellevue Hospital Medical College, etc. With numerous illustrations. New York: D. Appleton & Co., 1882.

At a recent lunch-party at a club, noted as a gathering-place of medical men in New York, the gynecologists, by a sort of mutual consent, prevailed and gave tone to the conversation. Among the topics brought up was the need of a new American treatise upon obstetrics, and who, among the men noted in literature, was the most likely to produce one worthy to fill the vacant place. Any one who is familiar with gynecologists will be prepared to hear that no agreement was reached. The conversation is alluded to as showing that among those who teach and study gynecology and obstetrics, there exists a feeling that we are not represented worthily in this department of medicine. Why this state of things exists, while medical literature in every other department is teeming with exuberant life, is a difficult question to answer. In other branches of our literature, but a single parallel instance exists, not from want of candidates for the vacant place, but from the light standard of criticism, that makes success nearly impossible. And why may we not adopt the latter as an explanation of the need that the gynecologists with more or less justice complain of? If we express this literary want numerically, we shall see that it is more apparent than real. In this country in the year 1880, we had nine obstetrical publications in the form of books, which, considered in a quantitative way, must have more than equalled any demand that obstetrical science or art could have made upon literature. While, then, we cannot say that obstetrical has not equalled, relatively in quantity, the more active and enticing gynecological literature, we may assume that it does not comply with a severe standard of criticism. This is partially confirmed by the fact that in Great Britain and Ireland, where the standard of merit in obstetrical literature is raised even higher than in this country, we find only five books of this class published in the same year. In Germany we have nineteen books upon obstetrics, and in France fifty-one for the same period. It appears to follow that this class of literature multiplies just in proportion as the critical standard is lowered, for in France, where such abnormal activity exists, but little original work is done in this department, and the literary work is sadly deficient in merit. As a matter of fact, much of this excess in French obstetrical literature is due to the rivalry existing between professors and competing clinics.¹ This class of work seems to be, among English-speaking people, under a healthful restraint. Men hesitate to risk their reputations upon a formal obstetric treatise. Where much is demanded, there is a natural reluctance to offer, especially, as in this case, in view of the severe labour and difficulties of the subject, a man offers his all. A man ages at once when he has given to the world a volume upon obstetrics. However young he may be, he becomes old when he has completed his life-work. He has but one trial, and he either succeeds or fails. If he is wise he reverses the order; he may write a book upon gynecology, and if he fails then, he may solace himself with the thought that he has obstetrics left

¹ *Obstetrical and Gynecological Literature, 1876-1880*. By James R. Chadwick, M.D., Boston, 1882.

to redeem his literary fortune. It is not in the order of nature as exemplified in this field of human effort that he can fail to meet the severe critical standard in the first, and claim the reward of posthumous fame in the second.

A work upon obstetrics ought to be the sum and crown of one's life, medically speaking. Ripened experience, study, practice, and the calm critical spirit of age, are the only sure foundations upon which to rear such a literary work as this. The names of men most familiar to the tongues of students and practitioners to-day, among those long since departed, are those of great obstetrical writers.

By the expected American work on midwifery is not meant the great masterpiece, but a book that will compare favourably with the state of literature in other departments of medicine, notably that of practice of medicine, physiology, surgery, and gynecology. In midwifery we have had one such book, now a generation old, but as fresh and as often quoted as though from a living hand. It is in this sense that gynecologists stand expectant, awaiting the coming book,—an expectancy born of a numerous succession of failures. There is danger, also, that having settled our canon of taste by the really brilliant treatises upon gynecology, we have raised the standard too high for the sister department of midwifery.

Another reason for the present state of obstetric literature in this country lies in the number of rival schools of medicine, and by some strange law, the working of which is past finding out, the obstetric professor feels called upon to produce a volume. The result is a large number of low grade books upon midwifery. From Maine to Oregon this literary law has been in force for the last fifteen years. With this multiplicity of schools, we have no great centres of obstetric teaching that will at all compare with the Prague, Vienna, or Dublin schools. From centres such as those have emanated settled methods of procedure that have guided thousands of medical men throughout the world.

Turning now to the state of our monographic and periodical literature, which is by far a better index of the condition of obstetrical literature than the ponderous treatise, let us inquire if it meets the demands of competent compilers. Taking Dr. Lusk's new book as a test of the material which he judges necessary for his work, we find that he has availed himself of American material in only 82 references, as indicated in the foot-notes; and he has borrowed from German authors 652 separate citations, indicated in the same way. By reference to Dr. Chadwick's interesting paper again, we observe that America produced 498 obstetric papers, and Germany 170 in the same year. If we judge of the quality of this great mass of native material by the use Dr. Lusk has made of it, the conclusion is forced upon us that the majority is worthless for scientific purposes; or, Dr. Lusk is possessed of a personal equation, as the astronomers call it, that alone will explain his strong bias toward German literature. While the disproportion between the use Dr. Lusk has made of German and native material cannot be taken as indicating the actual scientific value comparatively of the one over the other, yet it in a measure expresses the truth. A large amount of American periodical literature upon this branch cannot be used as scientific material, and mainly for the reason that a large proportion of these articles scattered through a great number of obscure medical journals, express matters of opinion rather than fact, and as such are of no use to the scientific compiler. Notwithstanding this superabundant obstetrical literature, it does not represent an equal amount

of original labour. The healthiest sign is, that this excess of periodical literature has raised our standard of excellency high in proportion, and given us a class of readers capable of applying this standard.

Dr. Lusk's book conforms in general arrangement to the conventional manner. He begins with the female organs of generation, development of the ovum, of the fœtus, and at the 82d page settles down to the theme of the volume. The only objection to be made against the author's anatomy is in reproducing the old and nearly abandoned pelvic section, in which the rectum and bladder are represented in a distended condition with the uterus lying between them, and in the illustration in question, the departure from the true condition of things is still further exaggerated by following the scheme of Kollikrausich in which the uterus is represented in a retroverted condition. After the careful work of Schultze and Alexander Simpson upon this point of anatomy, it is not a little singular that such an antique model should have been followed. While the first two chapters are generally the introductory portions of a treatise upon midwifery, still we think that the book of the future will appear without an introduction of elementary anatomy. Some things must be taken for granted by the writer of every text-book, and no assumption seems a safer one than that the reader understands the outlines of anatomy. A short and very practical chapter on the management of pregnancy is given. In pregnancy nausea and vomiting the usual and routine treatment is given, while the author is non-committal upon dilatation of the cervix, which has the enthusiastic endorsement of Sims. The frequency with which premature labour has followed puncture for œdema of the extremities has fixed the attention of the author. The physiology and mechanism of labour are given closely united with the anatomy of the soft and hard parts of the pelvis, and of the fœtal head, and is a very clear and concise exposition of the subject. The understanding of the matter is greatly aided by the very realistic cuts copied from Schultze, whom the author closely follows. In face presentations the author recommends the manipulation of Schatz, which consists in restoring the normal attitude of the body by flexing the trunk upon itself by external manipulation. The manœuvre seems a very practical one, and may bear excellent results. In the conduct of normal labour considerable attention is given to the preservation of the perineum; but we notice an absence of any attention to preserve intact a sister part—the margin of the cervix. Useful remarks are made upon tying the cord, the physiology of the placental circulation being the basis for a conclusion in favour of late ligation of the cord, while the practice of employing uterine expression previous to tying the cord is condemned.

The author is outspoken in favour of anæsthetics in midwifery, but is "certain that those who use chloroform habitually will find themselves compelled to resort to the forceps with somewhat increased frequency." In speaking of twin pregnancies, Dr. Lusk says, "twins from the same ovum are always of the same sex." There is about it simply this dogmatic sentence, nothing more. There is not a reference to an author who has approximated a demonstration of the fact, and it is not capable of clinical proof. The quotation is made as an example of quite a number of magisterial assertions that are out of place in a scientific book.

The section upon the physiology and management of childbed is an exceedingly good one. A temperature of $100\frac{1}{2}^{\circ}$ is regarded as normal for the first six days, with morning remissions and evening exacerbations. The only criticism to be made upon it is that the part devoted to artificial

feeding is not sufficiently full and explicit for the guidance of the inexperienced practitioner. There is no doubt that among native women, the necessity for artificial feeding of babes is on the increase, while the country is flooded with patent foods, and the pages of our best medical journals teem with the advertisements of preparations that are worthless, or poisonous to the new-born child. Under these circumstances this topic ought to be treated thoroughly and carefully.

The portion of the book devoted to the pathology of pregnancy is exceedingly elaborate and good, and forms quite a feature of the book. For the treatment of extra-uterine pregnancy the author recommends the faradic current during the first three months of pregnancy continued daily for one or two weeks, until shrinkage of the tumour proves the death of the fœtus.* Primary laparotomy (during the life of the child) does not meet with the approval of the author. Parry's frequently quoted table of twenty cases of this operation and the saving of six mothers and eight children ought to be reduced to the saving of but one mother, by the elimination of five of the reported cases. In all, Dr. Lusk states, there are twenty-four authentic operations and the recovery of but one mother. On the contrary, secondary laparotomy, "as distinguished from that performed during the life of the fœtus, has been such as to warrant its being placed in the category of justifiable operations." He advises that operative measures be delayed, if possible, until the maternal placental vessels are obliterated.

Obstetric surgery includes the induction of premature labour and abortion, the forceps and manual extractions, craniotomy, and embryotomy. The only feature worthy of mention in forceps delivery is the axis traction forceps of Tarnier, the only form of which is figured is the author's modification. One of the best portions of Dr. Lusk's book, we think, is that given to the employment of the forceps, which is the most direct and simple of any recent work we remember to have seen. It strikes us that the author might have gone more largely into the subject of external palpations and manipulations for the corrections of mal-positions, to the advantage of his book; the only one recommended is that of Wigand (1807). Mundé's elaborate paper in the *American Journal of Obstetrics* (1880) shows the wide field of usefulness that lies in this direction, and so little is known of it generally among practitioners that a formal treatise ought to give a practical *résumé*.

The part of this section most interesting to the readers of a review article is that devoted to a consideration of the relative merits of the operations of Porro and Thomas. No history is made so slowly as surgical history, in the sense that an event in surgery is not completed until its status as to usefulness and justification is fixed. In this relation it is too early in the history of these operations to reach a conclusion. These operations following the rather bad showing of the classic Cæsarean section, as to the saving of maternal life, are placed in vivid contrast with the latter. Porro's operation is clearly described, and Laparo-elytrotomy is given in the words of Dr. Garrigues's excellent article.¹ Of the latter operation the author says:—

"The results present scarcely a parallel in obstetric surgery. They ought certainly to inspire the profession with a confidence at least equal to that enjoyed by the rival procedure of Porro. The question to be decided in the future is as to how far laparo-elytrotomy is adapted to general usage. It is possible the

¹ N. Y. Med. Jour., Oct. and Nov. 1878.

successes so far obtained have been largely due to the exceptional merits of the operators who have undertaken it. With the present experience it would seem as though it ought to receive the preference in all cases where the dilatability of the cervix is such as to allow delivery by the forceps or version, after the artificial passage has been formed, to be accomplished with ease and celerity."

Upon Porro's operation, the author's comment is: "The chief merit of the method of Porro lies in the fact that each step in the operation is capable of human control, and is capable, therefore, of human improvement." We fancy that the author's meaning in this last quotation is that the uncertainties of hemorrhage, of difficult delivery, and of anatomical variations that render laparo-elytrotomy difficult to the general operator are not met with in Porro's method, which is reduced to the simplicity of an amputation. It is not so much the merits of Thomas's operation as a scientific procedure over that of Porro, that is to fix the relative status of these operations, but the readiness and confidence which the average practitioner will feel in the method he is called upon to select in the haste that usually attends these emergencies. In the section upon the pathology of labour the author deserves public thanks for his note upon the use of ergot on p. 428. He confines its use to the treatment or prevention of *post-partum* hemorrhage, and under no circumstances would employ it to expedite a labour, when the os uteri is "dilated, or dilatable," as some of the older writers have it, and, which we are sorry to say, is quite a general practice among American practitioners. For this purpose the author recommends quinia.

The chapters upon pelvic deformity form a commendable portion of the work. The grounds upon which the author advises the different obstetrical operations to overcome the obstacles to delivery are well chosen, and conform to the usual teaching upon this subject. We think that the author is mistaken in his explanation of the rarity of abnormal pelves among American women; we do not think that this is explained by the statement that the cases are overlooked, as the author has it, but rather by the fact that deformed native women rarely marry. There is, probably, no race in the world upon which conventionalism exerts a greater restraining influence upon marriage. Deformity of any kind amounts almost to a bar to matrimony. A short chapter follows upon abnormalities of the sexual organs, and another upon those of the fœtus, and in the latter spontaneous version and evolution are described. In the chapter upon eclampsia, the author is surrendered to the uræmic theory of etiology. For the treatment, he is a strong advocate of bleeding, which we think is a movement in the right direction, but his advice upon the employment of morphia does not conform to what has been established by excellent observers. From one-sixth to one-fourth of a grain hypodermically would rarely succeed in quieting the convulsive centres. One grain to one grain and a half at a dose we have seen given with the result of ending the convulsions. Morphia seems to be tolerated to a remarkable degree. For convulsions during pregnancy, the author advises the induction of abortion, as the practice of waiting until the completion of gestation has proved uniformly disastrous at his hands. Post-partum hemorrhage, placenta prævia, and inversion of the uterus follow, and give a fair idea of the accepted rule of practice in these conditions.

The two chapters upon puerperal fever are the best and most carefully written of the book. The author is surrendered wholly to the germ theory. Aside from the fascination that a theory formulated from tangible proof

has upon the scientific mind, and thus stimulating one to further inquiry, the germ theory has one never-failing practical result when applied to puerperal diseases, and that is clean midwifery. These two chapters may be regarded as written in this holy cause. All the difficulties in the way of explaining the kinship between erysipelas and puerperal fever disappear at the touch of the germ theory. Cukowski could at will cause erysipelas by fluids containing micrococci. The author says: "Thus we find in surgical fever, in puerperal fever, in diphtheria, and in erysipelas, the presence of a common element which links them together, and which establishes the relationship which has long been recognized as existing between these various processes." In the prophylaxis of this disease, the following rules, which the author gives, are the natural outcome of his theory: 1. Prevent the introduction of the germs (antiseptics before confinement). 2. Paralyze their action (antiseptics after confinement). 3. Shut up the doors—veins, lymphatics, and Fallopian tubes (employment of means which promote uterine contraction).

In the matter of treatment we think that the author's extreme caution in the employment of intra-uterine injections of antiseptic fluid is uncalled for. During a debate in the American Gynecological Society at Baltimore, we noticed that intra-uterine and vaginal irrigations with antiseptic fluids were generally employed with excellent results. In the use of Kibbie's fever-cot for topical antipyretic treatment of puerperal fever, the author states that he has made a good many trials of the method, "and has not found that it agrees with all in an equal degree. In some instances the effusions have been followed, in spite of hot bottles to the feet and the administration of stimulants, by such a degree of depression and impairment of cardiac force, that it has been necessary to discontinue them."

A very short chapter upon puerperal insanity, phlegmasia alba dolens, and diseases of the breast concludes the volume.

The impression produced by Dr. Lusk's book, as a whole, is one of painstaking, conscientious research. He has not shirked the great labour of going to original sources for his material. He has laid open to American readers the great store-house of German obstetric lore. No one can read his book and doubt his industry, or find fault with his judgment when he speaks for himself. That he has avoided the embarrassment of riches cannot be said. The profusion of literary material at his command throws upon the author the responsibility of striking a balance between conflicting opinions and so-called facts. He is bound to do this. He occupies a judicial position, as it were, and after mustering his great array of witnesses by book and page into his volume, he must decide for his jury of readers which is the better thing to do, or to believe. His readers cannot see behind the reference the finer meaning of the author cited. For these subtle shades of truth, the reader must trust to the compiler. The young reader will feel this as he turns to Dr. Lusk's book. The work is one that will be subject to frequent quotations, more we think for the sake of its references than for the original views of the author. We do not wish to be understood as insinuating that Dr. Lusk has surrendered his individuality. He has drawn liberally upon his considerable experience, but from the great mass of material with which this is surrounded, his own originality as a factor in the volume is obscured. Dr. Lusk's book is so rich in German references that it is well worth translation into German for the purpose of informing the young student of that nation of his own literature. Is it the American obstetrical work for which we

have all been waiting? We think not; but we have no great school to represent. We cannot demand originality when we have no source of originality; no great central school or system that produces an exponent. As a nation of thinkers and literary workers, we are a divided people. We are too active, too independent in our egotism for any one man or class of men to so group principles and facts as to found a school of opinions and practice. But there is no need of this. Science is cosmopolitan, not local. Broad then, in this sense, is Dr. Lusk's book; and we must say that he has succeeded fairly well.

The volume is illustrated richly and in a superior manner, and its make-up is creditable to the publishers.

E. V. de W.

ART. XXVII.—*A System of Surgery, Theoretical and Practical. In Treatises by Various Authors.* Edited by T. HOLMES, M.A., Cantab. First American, from Second English Edition, thoroughly revised and much enlarged. By JOHN H. PACKARD, A.M., M.D., assisted by a large corps of the most eminent American surgeons. In three volumes. Vol. II., pp. 1063. Philadelphia: Henry C. Lea's Son & Co., 1881.

THE second volume of *Holmes's Surgery* opens with articles on Diseases of the Eye and Ear. We presume these are a necessary part of comprehensive works, such as a "system" of surgery is intended to be. The diseases of which they treat have become so completely the property of specialists, that it would seem no more than proper to diminish very considerably the space which they occupy in the present work, and confine their scope to the description of those diseases with which it is necessary for the general surgeon to be familiar.

Mr. Durham's article on diseases of the nose is edited by Dr. J. Solis Cohen. It contains a great deal of interesting material, but we cannot avoid expressing the feeling that the opportunity which exists in this special field of surgery for a "first-class" article, such as might have been written by an experienced hospital surgeon, has not been seized. Deviation of the septum is an interesting topic which hardly receives adequate attention, but the advice given to abstain from operation we think good; none of the numerous operations which have been proposed for its relief have commended themselves to our judgment. There is the disagreeable possibility of transforming a discomfort into a discordant deformity by producing a slight nasal tone to the speech. Patients are chiefly disturbed by the fear that there may be a polypus, or that the distortion of the nose will become greater. The mind being set at ease on these points, they are usually content to leave matters as they are. The treatment of nasal polypi is in keeping with modern views; and the account of naso-pharyngeal polypi is fair, but a great deal remains to be said about the various operations for their removal. Langenbeck's admirable osteoplastic resection of the upper jaw, by which it is swung over on to the opposite cheek, and the numerous ramifications of their truly polypoid structure completely exposed, is not mentioned, nor does the work of American surgeons, as Cheever and others, receive notice.

Diseases of the Tongue, by Holmes-Coote, is ably revised by Dr. Charles McBurney, to whom we are indebted for many odd bits of information concerning this organ, such as elephantiasis, tubercle, and tumours other than cystic, of which there appears to be quite a variety. Of the tuberculous ulcer, he says: "Early excision of the diseased part is doubtless the best treatment. The wound left heals rapidly, and though the patient cannot be expected to overcome the general diathesis, yet he may, through operation, be spared much pain, and life may be prolonged." The different varieties of sublingual cysts are carefully unravelled by the editor. The specific affections are also given clearly in a few comprehensive sentences, and the closing remarks on operations upon the organs are among the best we know. The method of Professor Kocher, of Berne, of removing portions of the tongue, particularly in cancer, reads well. It consists in taking a triangular flap from the side of the neck, the base being upon the edge of the jaw, and throwing it up on to the cheek: all glands are removed, large vessels tied, and the mouth opened into under the edge of the jaw. Tracheotomy is recommended for most operations upon the tongue; it greatly facilitates the operation, but it should not be forgotten that patients not unfrequently succumb to acute lung inflammations just at the moment when the dangers attending the original disease seem to have been successfully overcome.

Part II. of this volume, devoted to diseases of the circulatory system, opens with a chapter on diseases of the veins by Callender, followed by articles on diseases of arteries by Moore, and aneurism by Holmes, all of which are revised by Dr. L. A. Stimson. Under the treatment of aneurism there are some interesting notes on the use of Esmarch's bandage. The rules for operative treatment are not so clearly laid down as we should wish to see them. The position of the "old operation," as it is termed, or cutting into the sac and tying both ends of the artery, is not given that prominence which it deserves in connection with the only variety of aneurisms to which it is adapted, namely, those of traumatic origin. The methods of treating the varieties of spontaneous aneurism which come under the care of the surgeon are now quite numerous. There is but little choice, however, in the traumatic variety; the Hunterian operation is frequently successful, but quite as frequently it fails to cure, and there is the possibility of being obliged subsequently to attack a suppurating sac. There is also quite a probability that the pulsations may not be permanently relieved. The dangers of a more radical operation are now greatly diminished by antiseptic safeguards, and although Dr. Keyes's case of varicose aneurism, in which this method was employed, terminated fatally, we are inclined to think that he adopted the right course, which we have also recently pursued successfully in a large femoral aneurism of the same variety. Considerable space is given to cirroid aneurism; but one important fact in regard to this variety does not appear to have been recognized, and one also that usually escapes notice, namely, the direction of the current of blood in the large vessels which are found radiating from the tumour. These are supposed to be afferent vessels, and the deception is natural when some well-known artery is among the number, like the temporal or occipital; in reality, however, the current is reversed. There is little use in attempting to attack the disease by tying these vessels, and the advice given to direct treatment to the central tumour is clearly proper. We take this opportunity to enter our protest against the modern rendering of the good old-fashioned word ligation; "ligation," now

largely adopted by American writers, has always seemed to us an unnecessary and somewhat pedantic innovation. We venture to say that it cannot be found anywhere in the original text.

The chapter on diseases of the absorbent system is entirely original, and appears to be a reproduction of the very valuable paper on that subject by Dr. Samuel C. Busey, with which many surgeons and pathologists are already familiar.

The description of apparatus for congenital cleft palate, by Dr. Kingsley, forms an interesting appendix to the article on disease of the teeth. Suersen, of Berlin, has given an impetus to this mode of treatment of the deformity, and the work of our American dentists is so excellent that we are inclined to the opinion that the mechanical treatment will eventually supersede operative measures entirely. Persons afflicted with this malformation may be conveniently divided into the two classes suggested by an eminent surgeon as a basis of classification in club-foot: those that are able to pay and those that are unable to pay. The latter will continue to frequent the hospitals, and will be well satisfied with the improvement bestowed upon them by staphylorrhaphy, but will be unable to acquire that perfection of speech which the more fortunate fellow-sufferers attain with the obturator.

Under diseases of the intestines, intestinal obstructions are treated of at length, but we do not find mention of the valuable work of Mr. Jonathan Hutchinson, which would have probably been added in an English revision of the subject. His method, which consists mainly in etherization and manipulation of the abdominal contents, has always seemed to us a very plausible, and, we might appropriately add, harmless way of treating this serious affection. In a note to Mr. Henry Smith's article on diseases of the rectum, we notice the statement of Dr. Packard that the ligature and *écraseur* are considered by American surgeons the best means of dealing with internal hemorrhoidal tumours. Our own experience would not support this view, the results of the clamp and cautery, combined with dilatation of the sphincter, appearing more favourable. This affection suffers generally from a too vigorous surgical treatment. Dilatation alone will often remedy the lighter forms of the disease, but care must be taken not to over-distend the muscle, lest a slight tendency to incontinence may result. In using the cautery also a few superficial applications will accomplish all that is needed, even in the severe forms of the affection.

Colotomy is an operation which is not performed in this country so frequently as in England; possibly there may not be the same necessity for resorting to it; the results are satisfactory, and the reviser justly recommends its use. Extirpation of the cancerous rectum has also been much neglected in the United States, and the papers referred to by Dr. Packard are among the valuable recent contributions to this subject. Our knowledge of hernia has altered but little within ten years, and Dr. Packard therefore finds but little to add to the somewhat elaborate treatise of Mr. Birkett. He wisely remarks: "In the United States a good many operations have been performed by different surgeons for the radical cure of hernia; but it would be difficult, if not impossible, to obtain anything like accurate statistics upon the subject, and especially as to results." For contributions to the treatment of irreducible hernia the editor does not appear to have made a careful revision of home literature. Of Mr. Birkett's work it may be said that, like most other articles on hernia, there appears to be a lack of system in "floating" the subject, which is possibly

due to the want of uniformity in English writings in methods of arrangement, and to the enormous amount of literature with which the author of an article on hernia is confronted at the very beginning of his task.

Part IV. is devoted to diseases of the genito-urinary organs. Sir Henry Thompson is the author of that portion which treats of the urinary organs; to Dr. Poland is assigned urinary calculi and lithotomy, lithotripsy being treated separately by Mr. Hawkins. All of these articles have been placed under the revision of Dr. Keyes.

This is a department of surgery, in all portions of which American surgeons have achieved the right to express an authoritative opinion, and in more than one they may justly claim to have earned a position unequalled by other countries; but it is to the treatment of vesical calculus that one naturally turns first to see what has been said. Dr. Bigelow's method is discussed in a separate chapter, under the title *Rapid Lithotripsy with Evacuation*, Dr. Keyes remarking that the term *litholapaxy* has not been generally accepted. It may be well to give here the reasons for the adoption of this name, which do not appear to have been understood. It occasionally happens that the bladder is found to contain a number of small calculi, all of which, though many may be of no inconsiderable size, will pass through the straight tubes without the aid of the lithotrite, in one case over thirty having been removed in this way. It is obvious that lithotripsy is a name which cannot be applied to such an operation, and the invention of a new term to cover these cases became a necessity. The general application to all cases in which the Bigelow method is employed seems to be justified, not only on the ground of simplicity, but also for emphasizing the complete novelty of the operation. The lithotrite, represented as Dr. Bigelow's, is not the one he now uses, an important change having been made in the shape of the tip of the female blade. His evacuator has also recently undergone several modifications.

That wonderfully versatile writer, Mr. Jonathan Hutchinson, is the author of the final chapter on the *Surgical Diseases of Women*, of which Dr. Skene has undertaken the revision; and here also we find that American surgery stands pre-eminent. We refer more particularly to the management of uterine fibroids, ruptured perineum and laceration of the cervix uteri, in which our gynecologists have achieved deserved distinction. The precise position which the latter operation will eventually take has, perhaps, not yet been fully determined. Like all new operations, it has probably been employed more frequently than eventually will be found necessary, but that it is a means of permanent relief, when "local treatment" has failed in a no small number of cases, will, we think, be generally conceded. The few pages given to ovariectomy seem hardly adequate to the great importance of the subject and the prestige which the triumphs of Wells and others have given to this operation. We presume lack of space has prevented the reviser from making any considerable or important additions.

We can but renew the praise, mentioned in the notice of the first volume, of the manner in which the publishers have done their work.

J. C. W.

ART. XXVIII.—*Die Wirkungen der Quebrachodrogenen. Der gegenwärtige Stand der Frage nach der Wirkung von Aspidosperma Quebracho (Q. blanco) und Loxopterygium Lorentzii (Q. Colorado) für praktische Aerzte und Pharmaceuten dargestellt.* Von Dr. FRANZ PENZOLDT. Erlangen, 1881: Besold, pp. 37.

As quebracho has assumed a distinctive place as a remedy, we take advantage of the appearance of Dr. Penzoldt's treatise to give an account of its botanical, physiological, and therapeutical properties. In the country of its origin, quebracho had already been known as a remedy for dyspnoea. Experience in Europe and in this country has confirmed this clinical report, and now an accurate knowledge of its physiological actions has been obtained.

Dr. Penzoldt received the first specimen of the bark from Dr. Schickendanz, of the Argentine Republic, and his first paper giving an account of its properties and uses, appeared in the *Berliner klinische Wochenschrift*, No. 19, 1879, p. 269. Mr. O. Prinke,¹ a pharmacist of Dresden, also received specimens from Prof. Hieronymus, of Cordova, which were examined by Dr. Dingler, the Curator of the Botanical Garden at Dresden. We learn from these sources, that there are four kinds of trees yielding the so-called quebracho wood and bark; hence there are great opportunities for sophistication. The genuine drug is *Aspidosperma quebracho*, of the natural family Apocynaceæ, and known in the native language as *Quebracho blanco*. There is another quebracho—*Q. Colorado*—much employed for tanning purposes, and which is known botanically as *Loxopterygium Lorentzii*, that has been largely substituted for the first mentioned. Quebracho Colorado is inferior to quebracho blanco, but it possesses analogous properties. The first specimens of bark sent to Europe were quickly consumed, and then the wood of quebracho Colorado was substituted, and hence, it is probable, that the results supposed to be obtained by the use of the other variety, were really due to this. That quebracho Colorado has properties analogous to quebracho blanco, is thus established. Nevertheless, the best successes have been obtained from the administration of *Aspidosperma quebracho*, and hence the preparations should be made from this. The bark of the branches, it is said, is better than that obtained from the trunk of the tree—a fact well known to be true of the cinchonas, also. The following preparations have been proposed by Dr. Burgos:—

1. *Compound tincture*, composed of the bark 2 parts, orange peel 1 part, and diluted alcohol 5 parts.
2. *Wine*—the bark 1 part, diluted alcohol 2 parts, and white wine 16 parts.
3. *Elixir*—the wine with sufficient sugar.
4. *Extracts*—solid, of the ordinary consistence, and the fluid extract prepared in accordance with the general directions of the United States Pharmacopœia.

The very disagreeable taste of the drug is a serious objection. According to Dr. Burgos, if the wine is prepared with San Juan, or Mendoza, the flavour is much improved. Probably the best preparation is the fluid extract, but its repulsive taste will require some adjuvants to render it even tolerable. As the active principle is insoluble in glycerine, this corrective should not be freely used in preparing mixtures extemporaneously.

¹ New Remedies, April, 1880, p. 111.

An alkaloid was first isolated by Fraude, who named it *Aspidospermine*. Soon afterward, Wulfsberg declared that this principle was identical with *paytine*, discovered by Hesse, but further investigation not only demonstrated the error made by Wulfsberg, but led to the finding of a new alkaloid in quebracho by Hesse, which he designated *quebrachine*. The richness of this drug in alkaloids is not yet exhausted, for Hesse informs us that there are probably three others. The discovery of quebrachine explained why it was that Dr. Penzoldt had failed to produce with aspidospermine the effects obtained from the bark. Quebrachine has strong alkaline and basic qualities, and is probably a better representative of the drug than the other alkaloid. Under the present circumstances, it were better to prescribe the preparations of the bark than the two alkaloids, as the others not yet separated may be possessed of some physiological power.

The actions of quebracho have been studied from the physiological and clinical standpoints. In cold-blood animals it causes motor paralysis of centric origin, and section of the vagus has no effect on the pulse frequency. In cats it causes motor paralysis and intense dyspnoea, during which the heart's action and the blood pressure are not essentially altered. The muscles of respiration are affected by the paralyzing action, *pari passu*, with the muscles of animal life. In man, some cerebral symptoms are produced. Laquer has observed that it causes headache, dulness of the sensorium, etc. Penzoldt, however, denies that it has any narcotic action, and refers the cerebral effects to the carbonic acid poisoning which ensues when the paralysis of the respiratory muscles has reached the degree necessary.

Penzoldt propounds the theory that the therapeutical effect of quebracho in relieving dyspnoea depends on the increased capacity which the blood acquires for the absorption and giving out of oxygen. Picot (*Berlin klin. Wochen.*, No. 52, 1880) has made some observations on himself, which appear to support this view. He ascended a mountain without and also with quebracho. On the first day, making the ascent without quebracho, his respiration rose to 42 and his pulse to 94, and he had an unpleasant dyspnoea. Making the same ascent after taking a full dose of quebracho, his respiration rose to 30 and his pulse to 80.

The effects of this drug cannot be explained wholly on Penzoldt's theory. All of the remedies belonging to the same group—the paralyzers of respiration—relieve the spasmodic neuroses of the respiratory organs. Thus lobelia, gelsemium, hydrocyanic acid, etc., are useful in asthma, whooping-cough, and laryngismus stridulus, and similar affections.

Very considerable clinical experience in the use of quebracho has now been accumulated. After Penzoldt, Krauth and Picot and Berthold¹ had the best results from it in asthma, the dyspnoea of emphysema, of cardiac disease, of catarrhal pneumonia, etc. The effect in these cases was limited to the mere difficulty of breathing which it relieved. In an old man with asthma (spasmodic), there was marked improvement, the paroxysm terminating after four doses of a teaspoonful of the tincture. In a case of emphysema, and one of difficult breathing from mitral disease, there was marked relief to the dyspnoea experienced, but in the respiratory embarrasments of pleuritis with effusion, and of bronchitis, no good resulted, yet in two out of six cases of phthisis there was some improvement (Ber-

¹ Virchow u. Hirsch, Jahresbericht for 1880, and London Med. Record, vol. viii. 1880, p. 38.

thold). Dr. Laquer, who used the remedy in Prof. Berger's wards, found it to be a valuable palliative in pulmonary emphysema and bronchitis, but of doubtful benefit in the difficulty of breathing due to valvular lesions of the heart. On the other hand, Krauth found it of great utility in heart disease with dropsy, in Bright's disease with dyspnœa, and in tuberculosis with emphysema and dyspnœa. Dr. Berkhart, of London, has used quebracho in asthma and emphysema with the effect to palliate the dyspnœa.¹ One of the most thorough and extensive reports on the use of quebracho is that of Dr. A. H. Smith² from the Therapeutical Society of New York. Of eleven cases of spasmodic asthma, the dyspnœa was notably relieved in nine. In two cases of asthma with bronchitis there was no relief. In six cases of cardiac disease, probably valvular, only two experienced any benefit to the dyspnœa, and in these the form of heart disease was not specified. In two cases of pneumonia, in one case of catarrhal pneumonia, in one case of aortic aneurism, in one case of cancer of the lung, and in two cases of Bright's disease, the dyspnœa which accompanied them was relieved. Of thirty-two cases, observed by the members of the Therapeutical Society, in which dyspnœa was a prominent symptom, it was relieved to a greater or less extent in twenty-two; there was no improvement in the difficult breathing in ten, and in one the breathing became more embarrassed. Dr. Smith offers a plausible theory to explain the effect of quebracho. He refers the action to the respiratory centre, the remedy blunting the sense of need of air.

From the various observations, we gather that quebracho has an undoubted therapeutical effect in lessening or stopping dyspnœa. It is most effective in spasmodic asthma, but may afford relief in any case, accompanied by the symptom dyspnœa. On the whole, the reports are fairly agreed as to the sphere and range of its powers. Some variations may be due to the preparation, and to the substitution of quebracho Colorado for the genuine quebracho blanco. But the differences between them are, however, differences of degree rather than of kind. R. B.

ART. XXIX.—*The Sympathetic Diseases of the Eye.* By LUDWIG MAUTHNER, Professor in the University of Vienna. *Translated from the German* by WARREN WEBSTER, M.D., Surgeon U. S. A., and JAMES A. SPALDING, M.D., Member Amer. Oph. Soc., etc.: pp. 220. New York: Wm. Wood & Co., 1881.

THERE is no class of diseases of the eye which should enlist more earnest attention on the part of the physician who is not a specialist than that which is commonly known as sympathetic ophthalmia. There are other diseases as destructive to vision, but most of them are not preventable, and many we are not able to control when once the morbid process has begun; but we have here an affection which is commonly regarded as being among the preventable diseases, and should it occur there is a liability of

¹ The British Medical Journal, January 31, 1880, p. 167.

² New York Medical Journal, September, 1881.

the charge of criminal carelessness and neglect on the part of the patient or surgeon, or of both. Moreover, these affections, since they arise mostly from injuries to the fellow eye, are likely to occur anywhere, and the practitioner remote from the specialist, and the young man just entering upon his professional career, are as likely to meet with them as their brethren in more thickly settled communities. To these the little book of Mauthner should be most welcome, as it gives the very latest knowledge of the subject in a clear, succinct, and comprehensive manner. In fact, there is no work in any language which goes into the question in all its aspects with the same thoroughness as does this one, and readers may rely upon it that they have in its pages all that was to be said upon the subject, up to the time of the publication of the original in 1878, which is the date of the German edition from which this translation is made. Nothing essentially new, however, has been added to our knowledge since that time, though *theories* have multiplied somewhat. All that is essential and practical remains the same.

The author considers his subject under the heads of anatomy, etiology, pathology, pathogeny and therapeutics. The causes of sympathetic affections are various, and almost all forms of injury and disease have been charged with it, but those which are the most frequent producers of sympathetic mischief are injuries, and particularly those injuries which involve the ciliary body and iris. In regard to this Mauthner says, "Simple injury of the ciliary body, when not implicated with prolapse of the iris or incarceration of some portions of the ciliary body in the penetrating wound, is not often followed by serious consequences." He is of the opinion that violent contusions and concussions inflicted by blunt bodies are the most frequent causes of the cyclitis and its associate diseases irido-cyclitis, which lead to sympathetic trouble. In these affections, as indeed in all troubles causing sympathetic disturbance, the morbid process is often very insidious, and frequently much damage is done before it is discovered. It must be remembered, too, that the sympathetic disease does not follow close on the heels of the original injury. Mauthner says he *never* saw it occur within four weeks, and as many as forty or fifty years may elapse between the receipt of the injury and the outbreak of trouble in the fellow eye.

As regards the form in which sympathetic trouble may appear, we can have it in any form of inflammation of any structure of the eye in which inflammation is likely to occur. It may also manifest itself as a simple *functional* disturbance without any visible alteration of structure, making itself known by an inability to use the eye for any length of time without pain or inconvenience, or it may show itself as a pure neuralgia of the ciliary nerves. This aspect of the question is treated with great impartiality and much detail in the chapter on pathology.

The section on pathogeny is one which shows much research and evinces great fairness on the part of the author in the weighing of evidence. This is the most obscure chapter in the whole question of sympathetic affections. How does the trouble pass from one eye to the other? There are two methods which at once present themselves to the mind as possible; one by means of the optic nerves, the other through the medium of the ciliary nerves. Both of these methods have adherents, but it seems probable, in the light of our more recent knowledge of the subject, that sympathetic disease may be conveyed by either one or both. On this point Mauthner sums up the evidence as follows:—

"We have, on the whole, no right at all to ask whether the sympathetic affection is transmitted along the optic nerves or along the ciliary nerves; nor can we ask whether its transmission takes place along the one path more frequently than along the other. For the transmission may be affected in both ways. But by this, however, we are not to understand that one and the same morbid process can be transmitted, now along one path and now along another. On the contrary, irritative and inflammatory conditions are transmitted from the optic nerve and retina along the optic nerves; whilst those inflammatory processes which are chiefly observed in that portion of the eye which is nourished by the ciliary nerves, and especially the uveal tract, are transmitted along the ciliary nerves. There is not the least doubt that the sympathetic inflammation may frequently be transmitted along both paths at once, or at short intervals, so that many symptoms in sympathetic affections of the uveal tract (amongst others the functional disturbances) are not to be attributed to the inflammation of the uveal tract, but to a simultaneous inflammation of the retina and optic nerve." (pp. 132-3.)

The last section (V.) is devoted to the therapeutics of sympathetic disease. It is here that the author joins issue with many surgeons, particularly of the English school. In England, in a general way it may be said, that an injured eye, particularly if no vision remains, means immediate enucleation.

" . . . Thousands upon thousands of eyes have been sacrificed," says our author, "and where is the oculist who feels wholly innocent of having operated under the philanthropical mantle of preventive enucleation, just for the sake of gaining some especially desirable specimen for his pathological collection?"

These are, indeed, grave charges, and the greater part of this section is given up to an effort to substantiate them. Conservative surgery is the crowning triumph of this era of medical science, but we must take heed lest we allow our conservatism to carry us too far. When a patient presents himself to us with a seriously wounded eye, with perhaps only a vestige of vision remaining, and we know that so long as that patient lives there is a *risk* of sympathetic inflammation in the other, which is likely to go on to total destruction of function in spite of the best directed treatment, and, it may be, even after the lapse of twenty or thirty years, it must be a very confident surgeon who will refuse operative interference, particularly as—according to Mauthner's own statement—enucleation during the active stage of sympathetic disease is futile if not pernicious in its influence on the course of the disease. This "preventive enucleation," which Mauthner seeks to bring into discredit, we deem the *true* conservative surgery. That enucleation during active process in the fellow eye is not always successful, and that it *appears* in some instances to be followed by evil results as to the course of the disease in the sympathetically affected eye, is no argument against its use under proper circumstances. If our patients had always an intelligent comprehension of the dangers they were threatened with, and we could be always sure that they were under the supervision of a competent surgeon, we could then conscientiously allow them time, but unfortunately such a happy combination of circumstances is rarely to be met with. Mauthner lays down the law as follows:—

"My creed in the question of enucleation runs briefly thus: It *MAY* be performed as a preventive; it *MUST* be performed in the stage of irritation; it *CAN* NOT be performed in iritis serosa and iritis plastica; it *CAN* be performed in iridocyclitis plastica, provided the eye causing sympathy is totally blind, but not in a state of violent irritation." (p. 170.)

We congratulate the translators on the satisfactory manner in which they have performed their work, and beg leave to express a hope that the success of this venture may be such as to induce them to give an English dress to the succeeding series of lectures by the same author on ophthalmological subjects. Of text-books we have enough and to spare, but exhaustive monographs like these lectures of Prof. Mauthner are at the present time an absolute necessity, alike to student and practitioner.

S. M. B.

ART. XXX.—*Handbuch der Historisch-Geographischen Pathologie.* Von Dr. AUGUST HIRSCH, Prof. der Medizin in Berlin. Zweite Vollständig neue Bearbeitung. Erste Abtheilung. *Die Allgemeinen Acuten Infectionskrankheiten.* 8vo. S. 481. Stuttgart: Ferdinand Enke, 1881.

Handbook of Historico-Geographical Pathology. By Dr. AUGUST HIRSCH, Professor of Medicine in Berlin. Second edition, entirely rewritten. First Part. *The Acute Infectious Disease, etc.*

THE study of diseases, with special references to their distribution over time and the earth's surface, possesses interest not merely for the scholars in the profession, but also for the busy practitioner of medicine, since for the intelligent management of a disease it is necessary for him to know where, when, and under what circumstances it first made its appearance; what conditions seem to favour its repeated outbreaks; what are the habits of the people and the geological formation of the country where it most frequently occurs; what influences promote its diffusion, and, if contagious, upon what does this property depend. These and numerous similar questions, while they had not been allowed to pass entirely without notice by authors, had never been satisfactorily answered before the appearance of the first edition of Dr. Hirsch's work twenty-five years ago. Since then there have been many other workers in this field, the result of whose labours has been a vast addition to our knowledge of the etiology of disease. Indeed, as the author says, we know more at the present day of the diseases of remote parts of the earth than was known in the early part of this century of those of the highly civilized nations of Europe or of this country.

The work, when finished, will consist of three volumes. This volume is made up of articles on the acute infectious diseases; the second will be devoted to the discussion of the chronic infectious diseases and constitutional diseases; and the third to that of organic diseases.

The general plan of the work will perhaps be made most clear to our readers by making for them a brief abstract of a chapter on an important disease, as, for instance, that on the plague:—

The author first traces the history of this disease from the time when we have the first authentic accounts of its ravages down to the present day. He finds in the *Collectanea*, of Oribasius, references to the writings of Rufus, which establish beyond a doubt the fact that the plague existed as an epidemic disease in Libya, Syria, and Egypt two or three centuries before our era, and that it also occurred in those countries at about the time of the birth of Christ, and for a century afterwards; but it would seem

not to have appeared again until the middle of the sixth century, when it extended for the first time to the continent of Europe, where it committed great ravages, and received, in consequence of the malignancy of some of its symptoms, the name of Black Death. It maintained a firm footing in Europe, breaking out from time to time, and causing, especially during the Middle Ages, great loss of life, until the year 1841, when, if we except a slight outbreak in Astrachan, it disappeared finally. In studying the history of the various epidemics which have occurred in Europe, the author has satisfied himself that Turkey has always been the avenue by which the disease has found its way to the continent.

We have, of course, less reliable accounts of the epidemics of this disease which have occurred in Africa and Asia. In Africa, it would appear always to have occurred first in Egypt, and to have extended from that country to the States of Barbary. On the other hand, it seems never to have spread to Nubia. In Asia, it is probable that there are few countries that have not been visited, at some time or other, by the plague, and among these Syria has generally suffered severely from it. Indeed, until recently this country was looked upon as the starting-point of the disease. From discoveries and investigations which have been made during the past few years, the author is inclined to think that the disease has existed in the mountainous districts of India for centuries, and that we must regard this country as its veritable home.

The author next proceeds to consider the various conditions which have been thought to favour the occurrence of the plague, and shows, by references to the recent reports of Indian physicians, that the countries of the tropical zone have by no means enjoyed the immunity from the disease which has been until very lately generally conceded to them. Extreme heat would appear, however, to exert a destructive influence upon the cause of the disease, and in Egypt epidemics are found generally to have commenced in the fall and to have ceased in the spring, but to this rule there have been a few exceptions. The author also assigns to dampness of the atmosphere very little influence in the propagation of the disease. In Egypt, it has not always prevailed most extensively in those years in which the overflow of the Nile and the consequent saturation of the ground with moisture have been most complete. He shows, also, that the disease may occur in a mountainous region as well as in a low-lying plain, and that it has been equally virulent in countries of the most dissimilar geological formation.

Misery, filth, and neglect of all the laws of hygiene appear to be the influences, which, if they do not cause the disease, certainly favour its spread, and those races which habitually set these laws at defiance are those which suffer most during the prevalence of an epidemic. Otherwise, there does not seem to be any difference in the susceptibility of the different races to the disease.

Dr. Hirsch evidently does not regard the plague as a very highly contagious disease, since he says that physicians and others who simply visit the sick, and do not spend much time in the sick-room, are but rarely affected by it, and doubts whether it is inoculable through the blood and secretions of the sick, or even through pus taken from the glandular swellings. He admits, however, that the disease may be diffused by means of the clothing of the patient, or other fomites. The poison upon which the disease depends is developed, he thinks, outside and not within the individual.

In conclusion he devotes several pages to a description of the disease, and to a comparison of the symptoms of the disease as described by the writers of the Middle Ages, with those presented by the disease as it occurs in India at the present time.

The book is a valuable one to the student of disease, and as such we recommend it most cordially to the profession. J. H. H.

ART. XXXI.—*Medico-Chirurgical Transactions*. Vol. LXIV. 8vo. pp. lxxvii., 324. London: Longmans, Green, Reader, & Dyer, 1881.

THIS volume contains nineteen papers, of which we have, heretofore, analyzed in the JOURNAL seven; to these, therefore, we shall not again direct our reader's attention.

Of the remaining twelve the first is *A Case of Abscess in the Neck which in its course destroyed a large portion of the Carotid Artery, Jugular Vein, and Pneumogastric Nerve*, by Mr. W. S. SAVORY, so far as we know a unique case, as to the character and the amount of the destruction it effected. He relates two other analogous, but less severe cases, in which, respectively, the jugular vein and the femoral artery and vein were destroyed. The chief case, however, was one of a man, æt. 31, who for two years had had a "lump" on the left side of his neck, which, after three days of irritation, suddenly "burst out bleeding." On admission the cavity was at once laid open, and an attempt made to tie the bleeding vessels. This being unsuccessful, it was packed with strips of lint soaked with Monsel's solution. He died four days later. The plate shows clearly the surprising solution of continuity of the vessels and the nerve. It is a matter of fact, not a little surprising, that no disturbance, either of the respiration or of the cerebral circulation, had attended the destruction of the nerve or the artery, due, doubtless, chiefly to the gradual changes produced. In this JOURNAL for April, 1871, Dr. S. W. GROSS published an elaborate paper on "Ulceration of the Jugular Veins," in which he collected a number of cases, which will well repay perusal. PILGER, in the *Deutsch. Zeitsch. für Chirurgie*, 1880, p. 130, also gives a case involving destruction of the nerve.

Amœboid Movements of the Colourless Blood-corpuscles in Leuchæmia, by Dr. JOHN CAVAFY, is the next paper. The patient, a male, æt. 26, died after seven months of illness of leuchæmia, with epistaxis, vomiting, purpuric spots, and enlargement of the lymphatic glands, spleen, and liver. The blood was examined on twelve occasions, the total number of white corpuscles in the specimen being first counted, and then the number of those that exhibited any amœboid movements. Meantime the temperature of the stage was kept at from 93° to 107°. The percentage of the amœboid corpuscles was very small, in spite of the temperature, ranging from only 24 down to 4 per cent. And the progressive diminution of those showing such movements was very noticeable, the first six observations showing a mean of 12 per cent., the last six of only 6 per cent. The conclusions he reaches are that, 1. The great majority of the colourless cells in leuchæmia are dying or dead; 2. Emigration of these dead cells is impossible; 3. The formation of thrombi is favoured; and 4, this absence of amœboid move-

ment may be made useful as a means of differential diagnosis of the early stages of leuchæmia, and a simple leucoeytosis or temporary increase in the number of the colourless corpuscles.

Dr. FRANCIS H. CHAMPNEYS next contributes two articles on *Artificial Respiration in Still-born Children*, extending to sixty-two pages. His conclusions, in the first place, are unfavourable to the methods of Marshall Hall, Howard, Schüller, and Schroeder, and favourable to Silvester's, especially with the modifications of Bain and Pacini, and to Schultze's method. Opisthotonos should be avoided, as it produces expiration. In the second paper he analyzes the effects of the various methods of artificial respiration in different parts of the lungs.

The paper by Mr. T. SPENCER WELLS will attract attention by its very title—*Two Hundred Additional Cases, completing One Thousand Cases of Ovariectomy, with Remarks on Recent Improvements in the Operation*. It is no wonder, then, that Mr. Wells has so charming an Elizabethan villa at Hampstead Heath. Moreover, no one envies him the possession of it.

From 1859 till the present time he has fearlessly published the result of every case. The results have progressively improved, the deaths in each hundred cases successively being 34, 28, 23, 22, 20, 28, 24, 24, 17, and 11. An excellent result, though not equal to the percentages obtained by Keith, Tait, and Knowsley Thornton, of only three to four in the hundred. The fall to 17 and 11 per cent. coincided with the adoption of the antiseptic system.

The improvements in the operation, besides the use of antiseptics, have been the following. Everything but silk for both sutures and ligatures has been abandoned. Dry dressings, of either thymol gauze or cotton-pads charged with borax or phenol, have been used, as they are more comfortable and more absorbent. As a rule, they are not touched before seven or eight days. After an operation the sponges are kept in a weak solution of sulphurous acid, and when operating they are washed in water and then carbolized. The instruments used are all nickel-plated to prevent rust. He has used the spray, but feels doubtful about it. The judicial tone of the whole article, as compared with Mr. Lawson Tait's boast of having pricked the antiseptic bubble, is most commendable.

The intra-peritoneal treatment of the pedicle has been almost constantly used. In 1878 of 627 extra-peritoneal cases, 20.73 per cent. had died; and of 157 intra-peritoneal cases, 38.2 per cent. had died, nearly twice as many. The great fall in the mortality in the later cases, so that that method, which was formerly twice as fatal as the clamp, is now only half as dangerous, he attributes to the antiseptic method, after which the septic changes around the tied pedicle are almost never seen. This decided leaning towards the intra-peritoneal treatment of the pedicle is in accordance with the experience of most gynecologists of large experience. Moreover, another great gain from the antiseptic system is the nearly absolute abandonment of drainage. In not one case treated antiseptically has he used drainage, and on reviewing them he thinks that in only two or three would it have been useful.

Formerly temperatures of 100° to 103° were usual, and 104° to 107° were not uncommon, and the head was cooled by ice in at least half the cases. Now cold is not used in one case in twenty, and 102° are rarely noted. Recovery, with no rise above 100°, is the rule. Phenol is his favourite antiseptic.

Dr. ARTHUR RANSOME contributes a paper, entitled "*Further Obser-*

rations on the Value of Stethometry in the Prognosis of Chest Disease." It is a continuation of his contributions on the same subject in his book on Stethometry, and his still earlier paper, in 1873, on the Respiratory Movements in Man. He has conclusively shown that both the forward and the upward movements of the chest-wall, as judged from the movements of the clavicle and the third and fifth ribs, are not only greatly lessened in phthisis, but that a fairly correct prognosis may be made by the use of this method. It is an important help to us in doubtful cases, and further use of it will doubtless increase its accuracy and value. Medical examiners in life insurance will value its results, and may well give a trial to his method.

The Development of a Layer of Elastic Fibres in Duct Cancer of the Breast, is a paper by Dr. GEORGE THIN. It continues and confirms the observations he communicated to the Society in the previous year by further studies on the same specimen.

Mr. CHARLES HIGGENS narrates a case of *Vascular Protrusion of the Eyeball*, in which ligature of the common carotid effected an entire cure. The operation was followed on the second day by partial hemiplegia of the opposite side, which varied curiously, and became complete on the sixth, began to improve on the twelfth, and had disappeared on the twenty-fourth. He ascribes it reasonably to serous effusion. The hair also turned from black to gray.

This and two cases published in the *American Journal of the Medical Sciences*, in April, 1876 and 1877, supplement to date the complete paper on the subject, by Mr. Rivington, in vol. lviii. of the *Medico-Chirurgical Transactions*.

Two papers on Skin Diseases follow. The first is by Dr. GEORGE THIN. It is *An Unusual Case of Warty Growths on the Face*. The patient at first glance looked as if suffering from confluent smallpox. The warty tumours appeared chiefly on the face, but had also appeared on the hands. A microscopical examination confirmed the diagnosis. The case was rebellious to all treatment for three years.

The next is *A Case of Urticaria Tuberosa, with Unusual Symptoms*, by Mr. WM. MORRANT BAKER, in which the wheals of urticaria were combined with persistent nodular thickening of the skin proceeding to ulceration.

Mr. JOHN CROFT next discusses *The Immediate Treatment of Fractures of the Leg by Plaster-of-Paris Splints*, to which is appended a table, giving briefly the mode of treatment of such fractures in eleven of the London Hospitals. At nearly all, splints are preferred; but at University the plaster bandage is used, and the plaster splints at St. Thomas's (where Mr. Croft is surgeon). It is noteworthy that in 1875 of 97 simple fractures of the leg, 63 were treated by splints only, and 19 by plaster of Paris only; in 1878, of 124 cases, 15 were treated by splints only, and 96 by plaster only; and in 1880, of 131 cases, 7 were treated by splints, and 123 by plaster. The progressively growing figures—presuming that the results were good, as it is proper to assume—are the best argument he can present.

He cuts two duplicate pieces of flannel for the outside, and two for the inside of the leg. In length they extend from above the knee nearly to the toes; in width a half-inch less than the semi-circumference of the leg. One layer of flannel is soaked in the plaster and laid on the corresponding piece. The double splint is then applied with the dry layer next the skin, and a muslin bandage holds it in place. Usually an anæsthetic is used during the dressing, and traction is kept up till the plaster sets in about

three minutes. Cutting the outer bandage in front or back releases either of the splints, which can be reapplied by a new outside bandage. For fractures of the femur it is modified.

The last paper is by Mr. CLINTON T. DENT, on *The Pathology of Acute Periostitis*. He gives clinical cases confirming his opinion that the different layers of the periosteum may be the seat of acute inflammation, and does not consider osteo-myelitis as a necessary concomitant.

W. W. K.

ART. XXXII.—*Restriction and Prevention of Diphtheria*. Document issued by the State Board of Health of Michigan. Revised edition of 1881. W. S. George & Co.: Lansing, Michigan.

THE State Board of Health of Michigan has been doing distinguished service in behalf of the public health. From its very organization its laudable aim has been to enlighten the people upon all subjects pertaining to the prevention of sickness and the protection of life. It has departed from the old routine custom of confining action exclusively to the enforcement of a few stereotype laws and ordinances limited in their scope to, and affecting only, the more patent and flagrant violations of sanitary law, and has entered upon the wider field of *protective* medicine. And, as an important element of success in the performance of its functions for conserving the public health, it has sought to educate the masses in the plain truths of domestic and public hygiene, especially in the practical details and conduct of preventive measures, thus securing that co-operation without which the best intended ordinances must fail, or be enforced only with the greatest difficulty.

In pursuance of this plan the board has recently issued a circular bearing the title of *Restriction and Prevention of Diphtheria*. It is replete with wholesome advice respecting the precautions to be observed in the management of the patient, the sick-room, the premises, and the attendants; the methods to be employed for disinfecting rooms, clothing, etc., and explains the purposes of the law in requiring the prompt report of cases of disease to the health officer, and the removal of the infected, in certain cases, to a separate building for treatment. It also suggests certain precautions to be adopted by persons during the prevalence of an epidemic, who otherwise might incautiously or ignorantly expose themselves or others to the danger of an attack. It advises the non-intercourse of persons recently recovered from the disease, and of persons from the premises where there has been a case of diphtheria, with others, until such intercourse is deemed prudent by competent authority. Rule eleventh may be quoted:—

“Rule 11.—All persons recovering from diphtheria should be considered dangerous; therefore such a person should not be permitted to associate with others, or to attend school, church, or any public assembly until the throat or any sores which may have been on the lips or nose are healed, nor until, in the judgment of a careful and intelligent health officer, he can do so without endangering others; nor until after all his clothing has been thoroughly disinfecting, and this without regard to the time which has elapsed since recovery if the time is less than one year. Nor should a person from premises in which there is or has been a case of diph-

theria attend any school, Sunday-school, church, or public assembly, or be permitted by the health authorities, or by the school board to do so, until after disinfection of such premises, and of the clothing worn by such person if it shall have been exposed to the contagion of the disease."

The publication of this circular is opportune and deserves to be commended. Unfortunately, diphtheria has not been regarded in the same serious light as scarlet fever, smallpox, and the like, and the health authorities and the public have not been accustomed to exercise the same vigilant care and circumspection in its management as its dangerous character would seem to demand. Why this is so it is difficult to comprehend. Its contagiousness is a well-recognized fact, and its ravages are familiar even to those who are not well acquainted with the mortuary statistics of the country.

"A disease," says Dr. Baker,¹ "which in one year (1859) caused in England over ten thousand deaths; in another year (1873) over one thousand in New York City; for each of two successive years (1876, 1877) in Massachusetts, over two thousand deaths; which for the eight weeks ending with Nov. 13, just passed, caused an average of forty deaths per week in the city of Brooklyn alone; and which, when once introduced into a city or State, does its work year after year with varying but with certain effect: a disease which, for the last twenty-three years, has been gradually extending itself over the whole northern belt of our country, and which declines only to rise again in periods of four to ten years, is a disease whose ravages are no less terrible than those of yellow fever, and which demands the attention not only of local, but of State and national boards of health."

There is the same urgent necessity for placing cases of diphtheria under strict sanitary surveillance, and of resorting to every reasonable precaution affecting the sick-room, premises, etc., and the intercourse of persons from infected houses with others, as is now required in the case of smallpox, scarlet fever, and other virulent diseases. There is need of regulation by the same stringent ordinances and rules, if any success is expected in restricting or checking the extension of this fatal disorder.

Diphtheria being pre-eminently a disease of childhood, it is a question to be pondered, whether the agency of public schools is not a very frequent one in communicating the contagion from person to person. Dr. Baker seems to have proved that diphtheria was spread in Lynn, Mass., in 1876, by the contact and association of children in schools, and similar evidence might be procured in other directions by the same patient investigation. Comparatively little attention has, however, been given to the subject, and but small effort has been made to prevent the spread of the disease in this manner. There are no insurmountable difficulties in the way, if only persistent, intelligent, systematic, and concerted action be brought to bear upon the elimination of this source of transmitting the disease. It is attempted in the case of smallpox and scarlet fever; why not in that of diphtheria?

Science has as yet discovered no means of antagonizing the poison of diphtheria in the system, or of conferring immunity from attack upon persons exposed to its contagium; no prophylaxis such as vaccination bears to smallpox: but it is not unreasonable to suppose that patient investigation and experimentation upon this important subject may yield as profoundly interesting and valuable results as those recently achieved by the researches of Pasteur in a collateral field of experimental medical

¹ The Relations of Schools to Diphtheria and to Similar Diseases. By Henry B. Baker, M.D., Secretary Michigan State Board of Health, Boston, 1881.

science. Until then our main reliance must be upon thorough and complete *isolation* of the sick and efficient *disinfection* of all infected material, both practically difficult of enforcement. In the first place, there will be required good laws and their intelligent, painstaking, and resolute administration. The greatest possible advantage will accrue from the universal and hearty co-operation of the medical profession with the health authorities, and the unreserved and faithful use of their exceptional opportunities for advising, directing, and even superintending the measures necessary for the restriction of disease and the protection of health and life.

Great results must be expected from a constant and rigid inspection of schools, and from imposing a disability upon all children who are, or have recently been sick, or who have associated with the sick (its violation punished by fine, if needs be), and the positive prohibition of all such persons from returning to school until after being so permitted upon certificate of a properly qualified sanitary officer.

The establishment of hospitals for the care and treatment of exceptional cases, and of disinfecting stations for the general use of the public, and also of buildings for the temporary care of persons who have been obliged to vacate their homes for the purposes of cleansing and disinfection,—are all very important requirements. From what has already been said it will appear, that no small benefit will result from instructing the people, by means of tracts, in the nature of infectious diseases; as to the risks to which they are exposed; in the peculiarly responsible relations which they sustain to society in the part they are liable to act in the propagation of these affections; and also in the requirements of the law, and in the details of the line of conduct they are expected to pursue. W. H. F.

ART. XXXIII.—*The Hysterical Element in Orthopædic Surgery.* By NEWTON M. SHAFFER, M.D., Surgeon in Charge of the New York Orthopædic Dispensary and Hospital, etc. Large 8vo. pp. 66. New York: G. P. Putnam's Sons, 1880.

THIS monograph of sixty-six pages, originally an essay read before the New York Neurological Society about two years ago, and published in the *Archives of Medicine*, has been made into a fair-sized book by the use of leads, wide margins, and heavy paper. In looking over it, one cannot fail to be attracted at first by the systematic arrangement of the discussion, as evidenced in the table of contents; nor does a careful reading lead to disappointment in the agreeable expectations which so good a beginning naturally arouses. The author discusses in regular order, and in a clear, scholarly manner, the phenomena of nervous mimicry of diseases of the knee-joint, of the hip-joint, of the vertebral joints and of the ankle-joint. In the preface and in the contents he calls attention to the absence of comments upon these conditions in "some of the more recent and pretentious works" on orthopædic surgery: a circumstance which is in no way creditable to their authors, in view of the tolerably frequent occurrence of such simulations of organic disease, and the clear light in which they have been set by men like Brodie and Paget.

In treating of what has been called "hysterical knee," he rests the diag-

nosis upon the disappearance of muscular spasm when the attention is diverted; the variable and inconstant character of all the subjective and most of the objective symptoms; the want of proportion between apparent pain and what the examiner knows would cause it in a really disorganized joint; the voluntary and conscious expression of pain; the exaggeration of distortions or limping; the absence of these when consciousness is entirely suspended, as in profound sleep or moderate anaesthesia; the normal reaction to faradic stimulation; the absence of the usual signs of local inflammation, and the presence of an emotional or hysterical tendency.

When speaking of neuro-mimesis of hip-joint disease, an important diagnostic point is drawn from the author's observations in several hundred recorded cases of true hip-joint disease, in which he finds that the atrophy of the thigh was uniformly far in excess of that of the leg.

Again, attention is called to the fact that one usually finds, in cases of true joint disease, that others notice the trouble first, while in the mimic disease the patient complains before any one else has noticed anything wrong. A useful suggestion is presented two or three times in different forms, namely, to make several examinations before coming to a positive diagnosis in case there is any uncertainty in one's mind.

The author prudently warns against being too quick to make a diagnosis of hysterical or mimic disease; since it does not answer to assume, because a patient is hysterical, that that is all that ails him or her—as many an unrecorded blunder could testify. It is in cases when the hysterical tendency is most marked that the difficulty of making a correct diagnosis is greatest. And it may be that the specialists in nervous diseases are as likely to ignore actual lesions as the orthopaedic surgeons are to underestimate the significance of purely nervous manifestations.

It will be comforting to any man who fails to conduct all his cases to a successful issue to learn that the author, when he wrote, had a case under observation "where everything which could be suggested by the most eminent medical talent in the city (New York) was carried out in the treatment of a recognized hysterical paralysis of the right lower extremity, with only partial success."

There is much to praise in the book before us, and very little to criticize adversely. Perhaps, for the credit of his town, the author has emphasized a trifle too strongly the eminence of the medical men whose mistakes he records. And, we think, the make-up of his book would be better if the studies concerning the different joints were set in separate chapters. These, however, are trifles, compared with the merits the monograph presents. It makes a very interesting and useful appendix to the sterling common sense of Brodie in his "Clinical Lectures on Surgery" and the charming writing of Paget in his "Clinical Lectures and Essays"—both of which should be read by any one who wants the best that has been written on this subject.

C. W. D.

ART. XXXIV.—*Beriberi, or the "Kakké" of Japan.* By DUANE B. SIMMONS, M.D., Eight years Director and Physician and Surgeon-in-Chief to Jienzen-in (the Prefecture or Government Hospital), etc. "*Beriberi*" at the *United States Marine Hospital, San Francisco, Cal.* By E. HEBERSMITH, M.D., Surgeon Marine Hospital Service. Washington, 1881.

THE work of Dr. Simmons is an excellent account of this strange malady—Beriberi—by a physician who has the ability and training to utilize exceptional opportunities. The second article is contained in the Annual Report of the Supervising Surgeon-General of the Marine Hospital Service, for the fiscal year 1881, and is based on a study of eighteen cases of this disease admitted to the hospital at San Francisco, from the Brazilian steam-corvette *Vital de Oliveira*. Dr. Hebersmith refers, frequently, to the monograph of Dr. Simmons, but he also contributes important observations of his own. The Brazilian vessel, extremely ill-arranged from the sanitary point of view, was rendered still more unhealthy by an imperfect dietary, and hence the crew became susceptible to the beriberi infection, which was encountered at Yokohama. Beriberi occurs in the Eastern Hemisphere, in countries bordering on the Indian Ocean, in Egypt, and in the Western Hemisphere in Brazil. "The principal seat of beriberi," says Lombard (*Traité de Climatologie Médicale*, Paris, 1880, tome iv. p. 559), "is the peninsula of India, the island of Ceylon, and the Indian Archipelago."

Two forms of the disease have been recognized from an early period: wet beriberi (beriberia hydrops), and dry beriberi (beriberia atrophica). The wet form is more rapid in its progress and more fatal.

The opinions which have been put forth in regard to the cause of the disease are entirely speculative. Simmons holds that it is a miasmatic material which has strong affinities with marsh miasm. Dr. Hebersmith considers it a blood disease; Dr. Eldridge an infectious disease; Dr. Aitken finds in the extreme anæmia the real cause; and the authorities quoted by Dr. Copland (Dictionary) regard the disease as a product of bad hygiene and malarial poisoning. Those are most liable whose occupations most expose them to the worst conditions, and who are reduced by an insufficient diet to a feeble and anæmic state. It is a disease of the summer, and is most prevalent when the climatic changes are severe and frequent, and the rainfall considerable.

The cases are acute, subacute, or chronic; mild or pernicious. There is usually a prodromic period, with intermittent symptoms—chilliness, a sense of fatigue, inaptitude for bodily or mental exertion, and weakness of inferior extremities. These symptoms may continue several weeks. The disease proper begins by spots of anæsthesia, over the anterior tibial muscles, in the tips of the fingers, and around the mouth, in the order named; then paresis of the muscles follows,—of those muscles beneath the areas of anæsthesia. A spastic contraction of the calf muscles also ensues, whence the gait is high-stepping, the weight resting on the toes, the heels elevated; a band-like constriction of the chest is also felt; and the contracted muscles, to a less extent the muscles generally, are sore to pressure. An outline figure in Dr. Simmons monograph well exhibits the general muscular rigidity, and the contraction of the calf muscles.

Both forms agree in the character of the symptoms up to this point. In

wet beriberi, the anasarea now begins, the œdema first appearing in the areolar tissue of the front part of the leg, and then extends to the body generally, which is round, smooth, and distended, the skin having a whitish-sallow tint. The pulse of the wet form is full, large, and without tone, and a systolic murmur becomes audible, and is "most distinct over the pulmonary valves." The heart seems to dilate, and the area of cardiac dulness is increased. The temperature is normal and often below. In fatal cases, dropsy of the cavities and œdema of the lungs come on, and violent vomiting closes the scene.

In the dry form the muscles waste, atrophy of their proper elements occurs, and complete paralysis ensues. The body shrinks; contractions of the atrophied members take place, and the heart acts feebly, the area of cardiac dulness narrowing. The urine is said to exhibit little or no evidence of disease, and is free from albumen. On boiling with nitric acid, it becomes very dark, almost black.

On post-mortem examination, the following changes are noted: There is no rigor mortis; ecchymoses and vibices are usual; the lungs are œdematous and the cavities contain fluid; the heart is dilated, softened, but the valves are not affected; the intestines are of a pink hue; the solitary glands and patches of Peyer are thickened; the cavity contains fluid. No special changes are noted in the liver, spleen, or kidneys. Effusion in the spinal canal and softening of the cord at various parts, have been frequently observed, and exudation into its substance and corpora amylacea are amongst the recorded alterations. The muscles affected by paralysis and atrophy undergo changes of a degenerative kind, their striations disappear, and the elements become fatty or vitreous.

A very important and interesting feature of Dr. Hebersmith's report is the condition of the blood. He includes "Notes on the Microscopic Examination of Blood," by Dr. J. H. Wythe, of San Francisco. Dr. Wythe describes the changes in the red and white corpuscles, and the appearance of rods and sarcina (?) present in the serum. The changes which occur in the morphotic elements (figured opposite, page 228) are well depicted. The rod-like bodies present the appearance of micrococci. Dr. Wythe thinks that the changes in the corpuscles occur as follows: "The white cells of the blood swell, become granular and disintegrate; then the red ones shrink, subsequently swell, and break up into straight or curved rods or granules."

That beriberi is a miasmatic infectious disease, is probably true. The microscopical studies of the blood, detailed in the report of Dr. Hebersmith, demonstrate that minute organisms, colonies of micrococci, develop in that fluid. None of the reports deal adequately with the spinal changes, nor do they contain satisfactory studies of the symptoms. The important results to be obtained from a proper examination of the electrical reactions of the paralyzed muscles are not referred to in any of the monographs. The relation of the spastic condition of the muscles to the paresis has not, apparently, been considered by the clinical observers. Notwithstanding omissions in the direction to which we have referred, the monographs under examination are full of valuable information about a rare but most interesting malady.

R. B.

ART. XXXV.—*Transactions of State Medical Societies.*

1. *Medical Communications of the Massachusetts State Medical Society.* Vol. xii., No. vii., 1881. 8vo. pp. 473-671, 195-254. Boston, 1881.
2. *Transactions of the Medical Society of New Jersey*, 1881. 8vo. pp. 311. Newark, 1881.
3. *Proceedings of the Nebraska State Medical Society, Ninth, Tenth, Eleventh, and Twelfth Annual Sessions.* 8vo. pp. 257. Omaha, 1880.

1. THE Annual Discourse before the Massachusetts Society, on *Medical Societies, their Organization, and the Nature of their Work*, by J. Collins Warren, is a valuable contribution to the history of medical societies in this country, but also refers briefly to the International Congress and the British Medical Association. Referring to the functions of these associations in the United States, gratification is expressed at the amount of valuable work accomplished in elevating medical education, and uniting the medical profession, and due credit is given to the American Medical Association. The medical mind was, throughout the country, roused into activity by its formation; and, although the early work in aid of medical education had little apparent effect at the time, undoubtedly it may fairly claim a share of the influence which has brought about the great changes of the past decade. The questions of public health, which have lately been so prominent, have reminded us of the usefulness of such a body, when well managed, in time of need. After pointing out defects due to the unsatisfactory delegate system of membership, and the ever-changing character of the material of this body, which give it a lack of stability greatly impairing its efficiency, the author suggests that something more than the lagging volume of *Transactions* be given in exchange for the annual assessment, and warmly approves of the plan of changing the plan of publication to that of a weekly periodical, as recommended by Prof. Gress, Sayre, and others. Speaking of its possibilities, in store for the American Medical Association, Dr. Warren says:—

“The future of the Association depends largely upon the success with which it identifies itself with the interests of the State societies. It would become a bond of union between them, the usefulness of which should be made so apparent that all would be glad to avail themselves of it. To effect this object, the present organization must be discarded, and an active and vigorous body must take its place, making its influence perennial, and appropriating for its highest offices the ablest men in the country. With such machinery the profession of the United States would, I think, be startled to find the power which it would be able to exert.”

Some of the salient points in the organization and history of a number of State medical societies are also briefly considered, chiefly, however, as throwing light upon the course of the Massachusetts State Medical Society, and pointing out dangers to be avoided in future. The career of this society has been, for a century, one of

“unbroken prosperity, unmarred by disputes or factions. In spite of the various waves of delusion, or pseudo-science, which have passed over the community during that period, the Society has maintained an unbroken front, and has always rallied round the flag of truth and integrity. Its attitude has been the only one which a truly scientific body could take. It has been the champion of perfect

liberty to all, but has withheld the hand of fellowship from those who would deny this boon to others, or would seek to enchain science with the manacles of theory or deceit."

The remainder of this volume is chiefly constituted of the admirable Centennial Address by Samuel Abbott Green, which is also historical, and deals largely with the history of medicine in Massachusetts in early colonial times, and contains interesting memoirs of many of the prominent physicians of that day. The report of the interesting Anniversary proceedings, with the usual minute of the meetings of Council, conclude the records of the most memorable and most enjoyable meeting probably that has ever been held by the Society.

2. The *New Jersey Society* met at Long Branch upon the one hundred and twenty-seventh anniversary of its organization. The greater part of the volume of *Transactions* is made up with the minutes of the meeting, reports of committees, and reports from district societies. Communications in the form of essays, besides the President's Address, are contained in this volume: one is a review by Stephen Wickes, M.D., in which some brief reminiscences extending over twenty-five years of the life of the Society are communicated; the second is an essay by G. H. Balleray on *Lacerations of the Cervix Uteri*, in which hysterotrichelorrhaphy is warmly supported, although it should not be unnecessarily performed. "Slight lacerations, unaccompanied by ectropion, and producing no discomfort, should be let alone." Silk sutures were at first used, but a preference was expressed for silver wire on the ground of subsequent experience. Mr. Charles J. Kepp, of Newark, contributed the third paper on *Eye Affections from Malarial Poisoning*. The most important paper read before the meeting was the President's Address on *Pleural Effusions, with Especial Reference to Pyo-thorax*, by Lewis N. Oakley, M.D., of Elizabeth. Reports of a number of cases are communicated showing the value of aspiration, systematic antiseptic washes, and the insertion of a silver drainage-tube.

In the reports from the district societies there are a number of interesting communications upon different subjects, probably the most important being an account by Dr. Henry E. Branin of an epidemic of typhus fever at the Camden County Almshouse. It is especially interesting from the fact that the health of the inmates of the asylum had been much reduced by malarial attacks, and that owing to certain circumstances the wards were frightfully over-crowded; the fever had all the appearances of typhoid at the beginning, but soon developed active contagious properties, and assumed the character of typhus; it was further observed that as soon as the hospital was fairly organized the epidemic declined in prevalence and mortality. Out of 103 cases, 33 died. Age greatly influenced the death-rate; the young mostly recovered.

3. The minutes of the *Nebraska Society*, with the Presidential addresses of the last five meetings, are included in the present proceedings, together with a full report of the meeting held in 1880. Very possibly some of the papers were read at preceding meetings, but they have nothing but their internal evidence to suggest the date. The most prolific contributor to this volume is Dr. A. S. V. Mansfelde, of Ashland, who is represented by a lecture on *Pleuritis, with especial reference to Surgical Treatment of Suppurative Pleurisy* (advocating free drainage and antiseptic infec-

tions); *Reminiscences*; *The Ovum in its Relation to the Laws of Evolution*; and *Sex Productions, whence our Body and its Individual Sexual Character*; and Dr. S. D. Mercer, who reports a case of *Compound Complicated Dislocation of the Scaphoid*; *Fracture of the Skull, with Trephining, Recovery*; *Depressed Fracture of Frontal Bone*; *Excision of Astragalus*; and an extended paper on *Spinal Curvature, Treatment by Sayre's Method*. Among the shorter papers is one on *Excision of the Hip-Joint*, containing a report of a case in which it was successfully performed by Geo. Tilden, M.D., of Omaha. Dr. M. J. Gahan reports a successful operation of ovariectomy performed in 1880; and Dr. L. J. Abbott records a case of operation for *Laceration of the Perineum in an Infant*, caused by injury from manipulation by the midwife during delivery, it probably having been a breech presentation.

This volume shows unsuspected activity in the medical profession of this progressive State. It is to be regretted that more careful proof-reading was not performed, as a multitude of orthographical, and not a few grammatical errors, might have been corrected that now mar the pages of this interesting volume of Proceedings.

F. W.

ART. XXXVI.—*Report on Hawaiian Leprosy*. Read before the California State Medical Society at San Francisco, April 20, 1881, by A. W. SAXE, M.D. Pamphlet, pp. 26. Santa Clara, 1881.

It is now six years since the attention of dermatologists and of the profession generally was drawn to the presenee of leprosy in North America, and particularly in the United States, by Prof. James C. White, of Boston, in a paper read before the Philadelphia International Medical Congress. At the first meeting of the American Dermatological Association, held at Niagara Falls in 1877, a committee on Statistics was appointed, in whose reports for each subsequent year have been included the statistics of leprosy in the United States, so far as these could be obtained, together with reports of cases and communications from various observers. At the fifth annual meeting of the Association, held last summer, nearly a whole day was devoted to the reading of papers on leprosy, and the discussion of the nature of the disease, the question as to its contagious character, and its increasing prevalence in this country. The interest taken in the subject of leprosy by the Association, together with the appearance of various publications and communications emanating from individuals in different parts of the country, show that the time has come for a more general study of the disease in all its bearings, in the hope that we may be able to control and repress it as it occurs in our midst, and may in time succeed in extirpating the affection entirely.

To this end, every contribution to our knowledge is valuable, and Dr. Saxe's paper is particularly interesting, as giving new information regarding the prevalence and characteristics of leprosy as found in the Hawaiian Islands, the yearly increasing commerce of which with our ports makes it important to prevent, as far as possible, the importation of the disease which is so prevalent there.

It appears from the statements of Dr. Saxe that leprosy was imported

from China into the Hawaiian Islands in 1840; that the first leper was recognized there eight years later; and that the first governmental action for the arrest of the disease was taken in 1859.

In 1866 the lepers under governmental supervision were transferred to the Island of Molokai, which was set apart as a leper colony where the infected could be isolated.

Five hundred and twenty-nine lepers were sent to Molokai. In 1872 the census of lepers showed three hundred and eighty-five in the settlement; but, as this showed that only a portion of the actual lepers had been segregated, public opinion was aroused, under the pressure of which four hundred and fifty-one undoubted lepers were sent to the settlement in two years. The mortality of the lepers in the eleven years from 1865 to 1876 was 87.2 per cent.

In January, 1880, there were seven hundred and thirty-three lepers in the settlement, besides which, according to Dr. Saxe, incipient leprosy may be found in nearly every part of the kingdom.

The danger to our country of this focus of leprosy in Hawaii will be understood when the increasing commerce and intercourse between the two countries is pointed out. In 1880, 5593 passengers landed from steamers at Honolulu, and 1928 embarked. The demand for skilled labour has brought a large number of Americans into direct contact with the Hawaiian population, and the danger from this source of the importation of leprosy to our shores is not to be underrated. Dr. Saxe's pamphlet contains a dozen photographic views of lepers, showing various stages and varieties of the disease.

A. V. H.

ART. XXXVII.—*A Manual of Midwifery*. By ALFRED MEADOWS, M. D. Lond., F.R.C.P., Physician Accoucheur to St. Mary's Hospital, and Lecturer on Midwifery and the Diseases of Women, at St. Mary's Hospital Medical School, etc. *Assisted by* ALBERT J. VENN, M.D., M.R.C.P., Obstetric Physician to the Metropolitan Free Hospital, etc. 12mo. pp. 498. New York: G. F. Putnam's Sons, 1882.

THE popularity of this work is shown by the fact that this is the fourth English edition. We are not at all partial to the use of manuals, although designed chiefly for the use of students; and especially do we object to obstetrical treatises in this condensed form, for the reason that the whole subject may be presented in an octavo volume of convenient size, which shall alike answer for the student and practitioner. The author, being an obstetrician of eminence, has added to the value of his work, by the introduction of many hints and directions derived from his own experience.

The book is thoroughly British in its teachings and authorities, and therefore not so well adapted to American practice, as some others of their works which have been remodelled here. The lateral decubitus is not only recommended in ordinary labours, but is adhered to in the use of the forceps, and even in craniotomy. Although giving a tabular description of thirty-eight varieties of the forceps, no mention is made of those of Hodge, Wallace, Bedford, etc., so much in use here. In the use of

the instrument the author directs that the blades shall be applied to the sides of the child's head.

Dr. Meadows is much more in favour of the Cæsarean operation than his countrymen generally are, and believes it preferable to craniotomy and less dangerous, if performed early, where the conjugate measures two inches or less. He quotes Churchill as authority, who gives 450 Cæsarean cases, with 230 women saved. We are satisfied that this is much too high, and have detected in his record of American cases a number of errors. Dr. Meadows attributes the excessive mortality in Great Britain to delay in operating; but there must be some other cause, as early cases have been much more fatal than with us. He states that, "according to statistics, it appears that in British and American practice, rather more than two-thirds of the mothers die" (page 267). This is altogether an error. The loss in Great Britain has been 81 per cent., that of America, $55\frac{1}{2}$ per cent., or 19 per cent. saved, against $44\frac{1}{4}$ per cent. It would be very unfair to America to say, that the two countries had lost 183 out of 266, or an average of $68\frac{1}{2}$ per cent.

In the management of rupture of the uterus, the author does not appear to have profited by the researches of Dr. Trask, of New York, not to speak of those of the reviewer. Speaking of gastrotomy, he says, "there are several cases on record where this has been successfully performed" (page 425). He appears not to have learned that twenty-one out of forty-one have been saved by it in the United States alone. Although an advocate of the Cæsarean operation, he appears to dread gastrotomy in cases of rupture, and recommends it only as a last expedient. We are confident that it is much less dangerous than the delivery of the fœtus by drawing it back through the rent as he advises. He says not a word about cleansing the peritoneal cavity, and the dangers of septic infection from the presence of escaped fluids therein.

Dr. Meadows treats of Symphysiotomy as a subject of no present interest, but simply one of historical curiosity, remarking that no one now ever thinks of performing it as a means of delivery in deformed pelves. He does not seem to have heard that this operation was revived in Naples in 1869; and that it has been performed fifty times since, or oftener than in the century prior to that year. This is a strange oversight, as Prof. Ottavio Morisani has written a large monograph on the subject; and has since presented it in a second pamphlet, as part of the scientific work done by members of the International Medical Congress of 1881.

The illustrations of the volume are generally good, but some are very badly executed; witness the left foot and leg in figs. 141, 142, and the arm and foot in 144. The right leg in the figs. 141 and 142 has the appearance of having been amputated and healed in utero. Viewed simply as a manual, the book is superior to the generality of its class.

R. P. H.

ART. XXXVIII.—*On Cancer, its Allies and other Tumours, with Special Reference to their Medical and Surgical Treatment.* By F. ALBERT PURCELL, M.D., M.R.C.S., Surgeon to the Cancer Hospital, Brompton, etc. 8vo., pp. 311.

THIS monograph discusses general topics relating to malignant growths, such as the definition of cancer, its anatomical aspect, infiltration and infection of adjacent and distant parts, methods of microscopic examination, and the classification of malignant neoplasms; and then considers in successive chapters carcinomas and sarcomas of the various organs. Occasionally other tumours, such as adenoma of the breast, are discussed, which are not looked upon as malignant, but which possess a clinical importance because of the necessity of their differentiation from cancerous affections.

In the Introduction the author speaks of the remedies that have been advanced for the treatment of cancer, and shows by examples the tedious and painful character of the caustic treatment. After a long and careful trial he believes that Chian turpentine is utterly valueless for the arrest or cure of cancer. This conclusion he reached from experiments made with the drug obtained from the very stock from which Clay received his supply. The best treatment in his opinion is operation, which he performs with antiseptic methods, according to Lister's teachings. There is added a long extract, of a half dozen pages, from Lister's paper on the Preparation of Cat-gut Ligatures. As cure by atrophy occasionally happens, he expresses the hope that at some future time a remedy may be found which will effect a cure of these malignant diseases. This is to be looked for in a constitutional remedy.

The author has the usual difficulty of defining cancer, and sometimes seems to use the word as synonymous with malignant, while again he appears to restrict it to carcinoma. He says, "Let us limit the term 'cancer' to those forms of disease which are specialized carcinoma (clinically including sarcoma and epithelioma)." His verbatim answer to, What is meant by cancer? is as follows: "It is a malignant growth, consisting of a delicate fibroid stroma, within its mes' . . . not coherent cell-elements—cells, nuclei, or granules . . . though often similar to natural cell-elements." It astonishes the reviewer that authors continue efforts to define a word which should have no existence in the scientific language of to-day. Cancer was employed in the ante-pathological era to signify a growth, of which nothing was known except that it was malignant. As soon as investigation showed that growths of different structure presented this characteristic the word lost its value, and now has no better claim to existence in scientific surgery, than "hives" has in dermatology or "amaurosis" in ophthalmology.

The author's views of the origin of cancer appear to consist in a belief that there is a constitutional predisposition of the tissue, but no constitutional blood-poison. He seems not to favour the theory of local origin; and does not refer to Cohnheim's hypothesis of unused embryonic cells. This criticism of his views is intentionally cautious, because the author does not express his opinions very dogmatically, but rather indulges in interrogatives.

Cancer is regarded as a disease of degenerated tissues; hence it is found very frequently in the breast and uterus, since these organs undergo functional degeneration at a comparatively early period of life.

Mr. Purell classifies the malignant tumours as follows: A. *Carcinoma*; including, 1, scirrroid; 2, hæmatoid; 3, melanoid; 4, colloid; 5, myxomatoid. B. *Sarcoma*; including, 1, spindle-celled; 2, round-celled; 3, giant-celled; 4, mixed-celled; 5, small round-celled (glioma). C. *Lymphadenoma*; D. *Epithelioma*; E. *Psammoma*.

That which may be called the second portion of the book, beginning at page 98, describes the malignant tumours as they affect the different external and internal organs. In this part of the treatise the author shows an equal familiarity with the microscopical and clinical aspects of morbid growths; and has, therefore, produced a series of chapters which are exceedingly interesting, and of great practical value. If space permitted, long extracts could be made which would convince the reader of this masterly combination of pathological science and clinical medicine and surgery; which is the more appreciated because so unusual in the literature of the present decade. The first part of the book deals apparently with questions too philosophical for the tastes of the author, and is, therefore, written badly; but the second portion is evidently the work of a practical observer, who has had abundant microscopical and clinical experience.

The remarks on treatment cannot fail to furnish suggestions to those who refer to the treatise for information regarding cases met with in daily practice.

The wood-cuts are rather poor, and the style of diction sometimes obscure (see top of page 152); but in the second portion of the volume there is so much of value that the reader forgets his uninteresting plodding through the early chapters, which will, perhaps, be improved in subsequent editions.

J. B. R.

ART. XXXIX.—*Ministro d'Agricoltura, Industria e Commercio, Direzione di Statistica, Annali di Statistica, Serie 2nd, vol. 6, 1881. Geografia Nosologica Dell' Italia.* Studio del dottore GIUSEPPE SORMANI, Professor d'Igiene nella Regia Università di Pavia.

Administration of Agriculture, Industry, and Commerce. Direction of Statistics, Statistical Annals, Nosological Geography of Italy, prepared by Dr. GIUSEPPE SORMANI, Professor of Hygiene in the Royal University of Pavia. 8vo. pp. 335. Rome, Eredi Botta, 1881.

DR. SORMANI having been very favourably impressed with the value and importance of the statistical atlas of the United States compiled from the census of 1870 by Francis A. Walker, conceived the idea of doing a similar work for his own country, and prepared from the census of Italy the volume under examination, for which he received from the Royal Lombardic Institute of Science and Letters a prize of 1500 lira, and a silver medal. The original paper was illustrated by an atlas of 80 plates; the volume here noticed contains seven. These all relate to the military service of the country, and exhibit at a glance, by the lightness or density of colour in the different provinces, the relative proportions of those disabled by reason of the following conditions or diseases. 1. Scald-head, most abundant in Southern Italy, maximum 30 or 40 to 1000. 2. Caries of the teeth, most abundant on the northern coast line, 8 to 13 per 1000.

3. Goitre and enlarged neck—Northern Italy, max. 100 to 320 to 1000. 4. Varices—Northern half of Italy, max. 30 to 41 to 1000. 5. Chronic diseases of the abdominal viscera, most abundant in the hotter districts, 30 to 50 to 1000. 6. Scrofula—Northern district, max. 0.8 to 11 per 1000. and, 7. Deficient height—Southern Italy and Northern frontier, max. 300 to 430 to 1000.¹

We will pass over the military statistics, and take up some of those which have a more general interest. The average annual mortality of the city of Turin is computed at 26.93 per 1000; Milan, 32.66 per 1000; Venice, 31.70 per 1000; Bologna, 30.41; Genoa, 30.42; Leghorn, 27.17; Rome, 33.38; Naples, 33.23; Catania (Messina), 31.08.

The deaths from phthisis and tuberculosis per annum, ascertained by the average of a series of years, were for Turin 2.39 per thousand inhabitants; Milan, 3.69; Palermo, 2.64. The minimum record (1.42) is that of Catania; and second, of Genoa, 2.00; Bologna, Milan, and Venice vary but slightly, ranging from 3.69 to 3.84, the maximum. Compared with these, we find the mortality by phthisis alone, to be in Glasgow, 7.0 per thousand; Edinburgh, 4.9; Paris, 4.1; Berlin, 3.8; Dresden, 3.0; and London, 2.9 (which is the average of England and also of Algiers).

The deaths from phthisis alone, in the chief northern Italian cities, taking the average of a series of years, number as follows, viz., Venice, 3.88; Padua, 3.03; Milan, 3.53; Genoa, 2.55; Turin, 2.58; and Verona, 2.10 per thousand of inhabitants.

Goitre and Cretinism.—Although these two affections bear an intimate relationship to each other, they are frequently independent, the cretin being often non-goitrous. In the cretin census of Piedmont made in 1845, there were 3909 goitrous to 2089 non-goitrous cretins enumerated. According to Baillarger (1873) France contained 500,000 goitrous subjects, and 120,000 cretins and idiots. In Piedmont, Liguria, and Savoy there have been found 7084 cretins and 21,841 subjects of goitre; the cretins averaging 2.7 to 1000 inhabitants, and the goitrous subjects 8.3. The largest number of cretins is found in the vale of Aosta, *i. e.*, 1418 or 27.0 per thousand. Of 2,000,000 Italians liable for military service, 4121 were exempted for cretinism and idiocy, and 42,862 for goitre.

Alcoholism.—This cannot be ascertained by the number of deaths attributed to intemperance in mortuary reports, as the causes of death are generally attributed to some immediate condition, such as cerebral congestions, convulsions, etc., rather than the primary cause. Italians are not given to intemperance in anything like the proportion which prevails in Great Britain and America. The number of confirmed drunkards as given for the year 1875, by Dr. Ernesto Terzi, was 15,895, or 0.55 to each 1000 inhabitants; of these the northern parts of the kingdom contained more than one-half.

Apoplexy.—The proportion of deaths from this disease amounts to about 100 to 1,000,000, or 0.10 to 1000. There were in ten years 1868–'77; 26,753 deaths. In England the mean average is 1.35, in Ireland 1.36, in Berlin 1.60. In the Italian cities the range is much higher than the general average, viz., Mantua, 1.90; Rome, 1.75; Turin, 1.61; Milan, 1.47; Bologna, 1.36; Palermo, 0.94.

Hernia.—20.8 of all men in Italy, per thousand, as shown by the re-

¹ The military minimum stature in Italy is 5 ft. 1 $\frac{1}{4}$ in. The number rejected in all Italy was 232,993, or 121.3 to each thousand "inscribed."

jections for the army in a period of fourteen years, are affected with hernia, varying in different localities, from $\frac{1}{2}$ to 3 per cent.

Suicide.—The average for Italy per an. is 33.5 in a million. Compare this with Spain 17 (average for 4 years), there were 36 in 1880; Russia, 29; Holland, 35.5; Norway, 73; France, 150; and Denmark, 258.

Homicide.—In this the comparison is reversed, Italy 67.5 in 1,000,000; Austria, 33.8; Belgium, 16.5; Prussia, 19.5; and England and Wales, 16.6. Of suicides Austria presents 86.5; Belgium, 72.2; Prussia, 144.6, and England, 67.9, per million.

General Mortality.—Average per annum in ten years 793,914, or 29.6 per thousand. Compare with Ireland, 17.2; Norway, 17.3; Denmark, 19.6; Greece, 20.9; England and Wales, 22.0; Belgium, 23.2; France, 24.0; Holland, 24.9; Prussia, 27.2; Spain, 31.2; Russia, 36.7; Hungary, Croatia, 38.0; and Slavonia, 43.7.

To the hygienist, this work of Prof. Sormani is one of much value and interest.

R. P. H.

- ART. XL.—*Health Reports*: 1. *Fourth Annual Report of the Connecticut State Board of Health for the fiscal year, ending November 30, 1881, with the Registration Report of 1880.* Hartford, 1882. pp. 300, pp. 100.
2. *Second Annual Report of the State Board of Health of South Carolina for the fiscal year ending October 31, 1881.* Charleston, 1881. pp. 304.

THE report from *Connecticut* opens with a general summary of the progress made and work done in hygiene during the past year, both of which are pronounced very encouraging. The voluntary sanitary associations, which have sprung up in various parts of New England, in imitation of Dr. Storer's at Newport, are justly praised, and hailed as the evidence of an awakening of public opinion to the immense importance of systematic care of the health, which is highly gratifying. The Connecticut Board has had more applications from local boards of health for advice the past twelvemonth than during any previous year, and the zeal and activity displayed are mentioned as being quite remarkable. In regard to the prevalence of diseases in Connecticut, it is stated that the deaths from typhoid fever, and from diarrhoeal diseases generally, have been more numerous, and that smallpox has been introduced into many of the cities and towns, but being for the most part carefully managed, according to the excellent "Instructions" (issued in pamphlet form by the State Board), in but few instances has there been any spread of the disease. The number of deaths from scarlet fever and from malarial affections has increased, but diphtheria has been rather less abundant and less fatal. A few cases of poisoning from aniline dyes, from cosmetics, and from arsenical wall papers are noted. A special investigation in regard to trichiniasis appears in the report, and others respecting the "Bad taste and odor of potable water," and one on "School Hygiene," are announced as being in preparation.

The body of the work contains, first, an interesting abstract of the

proceedings of the American Public Health Association, at its Savannah meeting, with which our readers are doubtless familiar. This is followed by a paper on the sewerage of Stamford, by Henry R. Towne, containing an opinion from Col. Geo. E. Waring, in which he urges the separate system, on the general plan of that adopted at Memphis, Tenn., and the pumping of the sewage from a reservoir so arranged as to secure sufficient fall into a main which will empty it beyond low-water mark. Prof. C. A. Lindsley, M.D., Medical Department of Yale College, contributes a valuable and timely essay on vaccination, in which, after a brief description of what Jenner's great discovery has done towards preserving mankind from smallpox, the author considers sundry collateral questions, and concludes that compulsory vaccination is most satisfactory, that bovine virus is safer, more protective, and less apt to transmit erysipelas than humanized virus; that therefore it is an important question whether reliable animal vaccine virus should not be systematically provided by State or national authorities; and finally that a primary infantile vaccination with good bovine virus is fully protective until the age of puberty, and vaccination then will protect through life (an opinion which we fear is not supported by all the facts.)

Dr. C. W. Chamberlin, Secretary of the Board, follows with an elaborate article on malaria in Connecticut, in which he maintains that epidemics of malarial diseases have appeared at intervals from the time the State was first settled; that the theory of the causation of ague by the *bacillus malarie* of Klebs and Crudelli, though not proven, has much evidence in its favour; and that when malarial affections appear in a locality, their tendency is to diminish the frequency of typhoid, and to render neuralgia and bilious diarrhoea more common.

The paper on malaria in Western Connecticut, by Egbert L. Viele, of New York, closes with an urgent plea for a complete survey of the State, with a view to its proper drainage, for the purpose of preventing malarial disease.

The last important essay (preceeding a digest of the sanitary laws and the Registration Report) is one of the "Natural History and Pathology of the Trichinous Infection of Man and Animals," by Noah Cressy, M. D., V.S., of Hartford. In his articles, after an account of the discovery of this dangerous parasite (from which we regret to observe, mention of the labours of Prof. Jos. Leidy, of Philadelphia, is omitted), its natural history in animals and in man is considered, and our great means of prophylaxis, that of thorough cooking, suitably insisted on. This paper is well illustrated by several instructive and generally accurate figures and plates.

The *South Carolina* Health Board, notwithstanding its machinery is new, and not fully adjusted to the circumstances under which it operates, presents a very creditable and useful report. The volume opens with an earnest address to the legislature on the "Sanitary needs of the State," in which are ably urged the importance and value of public hygiene. In this document the special wants of the South Carolinians are declared to be advice and assistance in removing the three great scourges which "have afflicted this country with countless woes, namely, *bad air, bad whisky, and bad biscuits!*" but an effort is, we rejoice to learn, also proposed towards fulfilling the subordinate duties of restraining nuisances, regulating the practice of medicine, establishing inter-state quarantine, remodelling sewerage works, controlling abattoirs, providing for inebri-

ates, etc. Nearly half of the volume is occupied with reports of sub-boards, committees, and reprints of laws in relation to different sanitary subjects, over which the Board of Health has jurisdiction, chiefly of local interest. Among the articles in the latter part of the book are to be noted an enthusiastic paper by C. R. Taber, M.D., on "A Knowledge of Bacteria, the basis of Scientific Hygiene," in which the alluring possibilities opened to our view by the discoveries of Obermeier, Pasteur, Klebs, and Wood, glitter with a renewed lustre. Prof. J. Ford Prioleau, M.D., contributes an admirable essay upon Scarlatina, and an account of the "Scarlatinous Epidemic of 1881 at Charleston, S. C.," by which we are informed, that this outbreak was the most severe that had ever visited the city, and was remarkable for the violence and suddenness of its invasion. The fatal attacks numbered 117, and were distributed through the spring and summer months; the total number of cases is estimated at nearly 1200. Dr. Prioleau also furnishes an article on "Break Bone Fever, or Dengue," valuable as containing the observations of an eye-witness to an extensive epidemic. In an interesting paper by Dr. P. A. Wilhite, of Anderson, S. C., on the "Etiology and Pathology of Intermittent and Remittent Fevers," the author, with a refreshing independence of both the older theoretical and newer microscopical authorities, contends that there is no such thing as malaria, its supposed effects being due simply to a humid atmosphere. Articles on the "Hygiene of the Eye in School Children," by Geo. Howe, Jr., M.D., of Columbia, S. C., and on "Ventilation of School Rooms," by B. W. Taylor, M.D., of Columbia, are good compilations of existing knowledge in regard to these sadly neglected subjects, so important to the coming generation of Americans; and essays on "Forestry in South Carolina," by F. F. Gary, M.D., and on the "Causes and Prevention of Liver Complaint," by S. Barnat, M.D., ex-President of the S. C. Medical Association, are thoughtful papers well worthy of careful consideration.

J. G. R.

ART. XLI.—*A Manual of Practical Normal Histology.* By T. MITCHELL PRUDDEN, M.D., Director of the Physiological and Pathological Laboratory of the Alumni Association of the College of Physicians and Surgeons, New York, etc. 16mo., pp. 265. New York: G. P. Putnam's Sons, 1881.

THE favourable first impression made by this little manual is increased, rather than diminished, by a closer examination of its contents. The book has been prepared for the use of those students and practitioners who, with a limited amount of time at their disposal, wish to acquaint themselves, in a practical way, with normal histology, and is not designed to take the place of more elaborate treatises on the subject. To accomplish these purposes it is well adapted. With description of preparations made according to the methods recommended, and written for the most part at the microscope table, an accuracy and naturalness are secured which become a safe guide to the student, working either alone or under the eye of a teacher.

The subjects treated include: 1. An introduction, in which general

methods for preserving tissues and preparing them for study are considered; then the cell in general. 2. Connective tissue. 3. Embryonal and mucous tissue; fat tissue; reticular connective tissue. 4. Cartilage; bone; teeth. 5. Blood and lymph. 6. Muscular tissue. 7. Nerve tissue. 8. Bloodvessels and lymphatic vessels. 9. Lymph nodes; spleen. 10. The gastro-intestinal canal. 11. Submaxillary gland and liver. 12. Suprarenal capsules; thyroid gland. 13. The respiratory apparatus. 14. The kidney. 15. The generative organs. 16. The central nervous system. 17. The skin and its adnexa. 18. The eye. It will be seen that these subjects include all that it is important for the practitioner to understand, and by following the directions laid down in Dr. Prudden's book he may acquire, without a teacher, such knowledge of them as will enable him sufficiently to understand the pathology of the diseases of the tissues and organs involved.

J. T.

ART. XLII.—*A Treatise on the Diseases of Infancy and Childhood.*
By J. LEWIS SMITH, M.D., Clinical Professor of Diseases of Children in Bellevue Hospital Medical College, etc. etc. Fifth edition, thoroughly revised. With illustrations. 8vo. pp. xvi., 828. Philadelphia: Henry C. Lea's Son & Co., 1881.

IN a review which appeared in the April number of this Journal for 1869, we expressed the opinion that Dr. Smith's work on the Diseases of Childhood, although incomplete, was a valuable addition to the existing treatises on this subject, inasmuch as it embodied the experience of a close and thoughtful observer, whose opportunities for the study of this class of diseases had been unusually extended. The fact that it has passed through four editions, and that a demand for a fifth edition has made itself felt within twelve years of the time of the appearance of the first, will, we think, be accepted as proof that we did not there exaggerate its merits. The book is, however, no longer open to the charge of incompleteness. In each successive edition an effort has been made to supply the deficiencies of its predecessors, and this has been done with so much success that its claim to be a complete treatise on the Diseases of Childhood will no longer be disputed.

The most important addition which the author has made to this edition is a chapter in which he gives the results of a series of experiments, and observations conducted at the New York Infants' Asylum and the New York Foundling Asylum, to determine the quantity of food required in infancy and childhood, to insure normal and healthy growth. The chapter on rachitis has been almost entirely rewritten; important additions have been made to that on pleurisy, and throughout the book will be found abundant evidence that it has been subjected to a careful and intelligent revision.

J. H. H.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

Congenital Malformations of Intestines.

Of all malformations due to arrest or perversion of the normal developmental processes, that which gives rise to the retention of a diverticulum from the ileum, representing the relie of the omphalo-mesenteric duct, is perhaps the most common. In the adult this diverticulum is generally seated about three feet above the ileo-cæcal valve; it springs, as a rule, from the convex surface of the intestine, and is not only formed by walls precisely of the same nature as the bowel, but is generally also furnished with a small fold of serous membrane on one side—a miniature mesentery. In length it varies from half an inch to five or six inches, and in the latter case may be attached to the under surface of the umbilicus, with or without structures representing obliterated omphalo-mesenteric bloodvessels. It is usual to call such diverticula by the name of Meekel, to whom belongs the credit of having (in 1813) first correctly interpreted their nature. Since he wrote it has been generally admitted that he was right in attributing such diverticula to the persistence of a portion of the yitelline or omphalo-mesenteric duct—a structure which in the human fœtus is present only for the first six weeks or so of embryonic life. Naturally one may expect to meet with variations in the form and disposition of such fœtal relics, owing to the supervention of various disturbing influences. A fairly complete but concise account of all the malformations that may so arise is contributed to the last number of Virchow's *Archiv* by Prof. Roth, of Breslau, in which he arrives at the following classification: 1. The ordinary Meekel's diverticulum, which may lie within the abdominal cavity, within a hernial sac, or between the folds of the mesentery—the latter a very rare condition, of which he gives an instance. 2. Adherent diverticulum, either to the umbilicus, by the remains of the omphalo-mesenteric vessels, or more rarely to other parts of the abdominal cavity. 3. Diverticula which, instead of being closed at their free extremity, remain persistently open, the closed end having sloughed away with the separation of the umbilical cord. This opening may be at the umbilicus, forming an intestinal fistula, or in the prolapsed portion of the diverticulum, or in the midst of a fleshy appendage seated at the umbilicus (of which he describes an interesting case), or complicated by hernial prolapse in that region. 4. Peculiar cysts composed of walls reproducing the epithelial and muscular elements of the intestine, and filled with serous-looking fluid. These "entero-cystomata" may retain

their connection with the intestine, or they may become detached from it, and even be met with in the thoracic cavity, owing to their formation taking place before the division of the pleuro-peritoneal cavity into two sacs. The following is a brief account of the conditions found by Dr. Roth in two such cases: One was that of a male child sixteen months old, healthy till two months before death, which occurred from gangrene of the pedicle of the cyst and peritonitis. Within the abdomen an oval cyst lay in front of the mesentery and behind the omentum which was adherent to it. It was furnished with a pedicle, eleven millimetres long, attached to the concave border of the ileum, sixty-six centimetres above the ileo-cæcal valve. Through this pedicle communication existed between the bowel and the cyst, which contained not only some brownish-red slimy fluid, pus, blood, and epithelial cells, but starch-granules and muscle-fibres from the ingesta. The cyst was lined by columnar epithelium, villi, and Lieberkühnian follicles, beneath which was a compact submucous layer and a layer of muscular fibres, disposed circularly and longitudinally. The cyst then was nothing but a greatly dilated free extremity of a Meckel's diverticulum, which was itself provided with a short mesentery. The other case was one where a diverticulum occurred within the mesentery parallel to the gut from which it sprang, whilst three distinct cysts occurred elsewhere. A small one, not far from the diverticulum, lay also between the folds of the mesentery, whilst two of much larger size occurred at a distance from their supposed seat of origin—one, namely, behind the peritoneum in the abdomen, the other occupying the posterior mediastinum and compressing the lungs. These two cysts may not have been derived from the ileum, but may have been formed *in loco* by aberrant development in the œsophagus or duodenum. But, like the smaller one, they were lined by columnar cells, and had plain muscular fibres in their walls.—*Lancet*, January 21, 1882.

A New Formed Element of Mammalian Blood.

The discovery of a new and important constituent of the mammalian blood has just been announced by a distinguished investigator of blood formation—Professor BIZZAZERO, of Turin. This new element is not the same as the invisible corpuscle of Norris, but presents nevertheless somewhat similar characters. If the course of the circulation is watched in the small vessels in the mesentery of chloralized rabbits and guinea-pigs, there are seen, besides the ordinary red and pale corpuscles, third elements—very pale, oval, or round disk-shaped or lenticular bodies, one-half or one-third the diameter of the red corpuscles, among which they are scattered. “Blutplättchen,” Bizzazero proposes to call them. They have hitherto escaped notice, probably because they are so colourless and translucent, less numerous than the red, and less visible than the white corpuscles; and on account of the difficulty of observing the mammalian blood in the course of the circulation with a high magnifying power. They are to be observed also in freshly drawn blood, for the most part aggregated around the colourless corpuscles, or, ascending to the upper layer, they adhere to the cover-glass. They change, however, with great rapidity, rapidly become granular, and appear to be the source of the small granule masses which have been described by many observers. The corpuscles can be preserved unaltered in form for more prolonged examination by certain reagents, as, for instance, by a solution of chloride of sodium tinted with methyl-violet. They are to be found also in human blood, but they undergo alterations with extreme rapidity, and the best method of observing them has been found to be by placing a drop of the above solution over the puncture, and then squeezing the blood out, and immediately examining it under the microscope.

Bizzozero has been unable as yet to ascertain anything regarding the origin of these elements. It is exceedingly improbable that they are in any way derived from the ordinary colourless corpuscles, because they possess a very definite and characteristic form, and the leucocytes contain no element from which these objects could be derived. A comparison between the blood in the vessels and out of the body thus clears up the origin of the granule heaps, which some regard as products of the destruction of leucocytes, and others, as Hayem, ascribe to changes in peculiar flat corpuscles. The latter view is undoubtedly correct, although Hayem does not seem to have observed these elements in the circulating blood, since he describes them as biconcave disks which are transformed into red corpuscles, and calls them "hæmatoblasts." The objects regarded by Bizzozero as the source of the granules possess no stroma, and never contain hæmoglobin; they differ therefore from the hæmatoblasts of Hayem.

The new elements seem to play an important part in the functional alterations of the blood. They are increased in certain morbid conditions—as, for instance, after bleeding,—and play an important part in the production of thrombi. They constitute the chief part of the white clots in the mammalia, since they give rise to the granular material which is seen between the pale corpuscles, and which has hitherto been ascribed to the degeneration of fibrin. In the process of coagulation these elements appear to exert the influence which has been attributed by Mantegazza and Schmidt to the colourless corpuscles. Schultz, Ranvier, Hayem, and others have noted that the reticulated threads of fibrin often present at their junction these groups of granules, and hence inferred that the latter were produced by the degeneration of the fibrin. Hayem, however, found that certain fluids which hinder coagulation preserve unchanged the form of his "hæmatoblasts." It will also be remembered that A. Schmidt asserted that the coagulation of the blood is effected by the white corpuscles, which by their destruction yield the granules, and so constitute a considerable part of the substance of the clot. Bizzozero, however, now urges that the formation of the clot is due, not to the white corpuscles, but to these new elements. He has never been able to satisfy himself of the wholesale destruction of white corpuscles assumed by Schmidt. Leucocytes are comparatively few in the circulating blood, and he could never observe any destruction of them after the blood was drawn, provided it was mixed with an indifferent fluid, such as a saline solution. The time at which coagulation occurs in a given drop of blood corresponds closely to that at which these new elements present the degenerative changes. The fluids which retard or prevent coagulation—solutions of carbonate of soda or of sulphate of magnesia, for instance—also hinder the granular transformation of the new corpuscles. The indifferent solution of chloride of sodium does not preserve them, but one to which methyl-violet has been added does so. With the former the blood coagulates in a quarter of an hour, with the latter it remains liquid for twenty-four hours. If a vessel of a living animal is included between two ligatures, the blood within it remains liquid for hours, and during the whole time these elements preserve their characteristic form, although in blood outside the vessels they undergo degeneration in a few minutes. If blood is "whipped" and the fibres employed are withdrawn before coagulation commences, and are then immersed in a liquid capable of preserving the new elements unaltered, it will be found that they are covered with a thick layer of the new elements, among which are very few white corpuscles. If the whipping has been continued longer, these elements are found to have undergone degeneration and to remain on the layer of fibrin. From these facts it follows that whereas the ordinary white blood-corpuscles present no noteworthy changes at the commencement of coagulation, these new elements are considerably altered, and where they adhere,

there the fibrin is deposited, and, finally, that all agents which hinder their transformation retard also the coagulation of the blood. The evidence is thus very strong that this coagulation—that is, the formation of fibrin—takes place under the direct influence of these corpuscles.—*Lancet*, Jan. 21, 1882.

Formation of Red Blood-Corpuscles.

The authority with which M. MALASSEZ speaks upon all subjects connected with the constitution of the blood confers importance on a summary of facts relating to the formation of red blood-corpuscles in bone marrow, which he has recently communicated to the Société de Biologie. This summary contains an account of the results attained in a series of investigations on the subject, and embody facts and theories of undeniable importance. It is generally admitted, since the discoveries of Neumann and Bizzozero, that the red cells discovered by the former in the bone marrow of the mammalia are embryonal corpuscles, but various opinions are held regarding the origin of these cells and the mode in which they are transformed into red blood-disks. It is to these two points that his investigations have been especially directed. The first hypothesis which was advanced—and it is still accepted by many authorities—is that the red cells are transformed into corpuscles by the gradual disappearance of their nuclei. If the process is studied in animals in which the red corpuscles are nearly the same size as these cells, forms of the latter may be observed in which the nuclei appear to be in process of disappearance. But if methods are employed which leave the structure of the cells unaffected, and especially if the examination is made in animals in which the red blood-disks are considerably smaller than these cells, such intermediate forms cannot, according to Malassez, be discovered. Moreover, the corpuscle is so much smaller than the cell, that a transformation of one into the other would imply either a contraction of the protoplasm of the cell, or a change by which this breaks up and forms more than one globule, and each assumption is destitute of evidence. Hence the conclusion is drawn that this theory of transformation by destruction of the nucleus is untenable. Rindfleisch, from appearances which he observed in some cells, concluded that the change does not consist in a destruction of the nucleus, but in the exit of this from the cell. This appearance is stated by Obrastzow to be due to an alteration of the cells analogous to that which Donné long ago noted in the corpuscles of the frog treated by water. It is probably an artificial phenomenon, for it cannot be observed in recent or well-preserved specimens.

In studying the formation of blood-corpuscles in the spleen, Malassez and Picard observed cells, charged with hæmoglobin, which presented protoplasmic buds having the aspect of red corpuscles, but spherical in shape, and it was suggested that these, being detached, might become separate blood-disks. Malassez has succeeded in finding a similar appearance in preparations of bone marrow, which were made in such a manner as to preserve undisturbed the form and structure of the tissue elements. A fragment of fresh marrow was teased out on the object bearer without the addition of any reagent. Sometimes the glass slide was merely touched with a fragment of marrow. The preparation was then exposed to the vapour of osmic acid. The tissue elements being thus fixed, they coloured with picrocarmine, or with eosin and logwood. In the hare the hæmoglobin cells are very large in proportion to the red corpuscles, and they may present several minute buds. In the rabbit, calf, cat, and child the cells are smaller, and usually the bud is single. The most developed prominences tend to become constricted and pedunculated, and thus to assume the appearance of spherical corpuscles. Their substance possesses the same homogeneity, the same refractive

power, the same colour, and presents the same histo-chemical reactions as do the red blood-corpuscles. The only difference is in their shape. But the normal globules, which are biconcave, may under certain conditions of humidity, etc., swell up, become concavo-convex, and, finally, biconvex and spherical. It does not seem inconceivable, therefore, that these buds, becoming detached, may undergo the converse transformation; and the difference in shape does not constitute adequate ground for the rejection of a theory which can plead in its favour a high degree of intrinsic probability.

Regarding the origin of the red cells of the marrow, certain facts appear to be well established. They may be seen in every stage of nuclear division, and it is therefore, generally admitted that they are capable of fissiparous multiplication. But their primary origin is still involved in considerable obscurity. The earliest theory, which is still extensively held, is that they are derived from white blood-corpuscles. But the blood contains several varieties of leucocytes. Malassez believes that we must reject the idea that they come from ordinary leucocytes, with a finely granular protoplasm, and which appear polynucleated when they are treated with osmic acid; and also the view that they are formed from the white corpuscles which stain with eosin, because these elements are completely different from the red cells, and in properly prepared specimens no intermediate forms can be discovered. The origin of these cells from the hyaline leucocytes is much more probable, but is destitute of evidence. Preparations made in the above-described method show, however, a perfect series of cell-forms, at one extremity of which is the red cell, and at the other is an element of very different aspect. The forms which resemble the red cell are clearly more differential and specialized than the others, and they may, therefore, be regarded as more advanced in development. All the forms may be referred to three principal types. Those which are nearest to the hæmoglobic cell differ in their more hyaline protoplasm and smaller amount of hæmoglobin in the reticulated form of their nuclei, and in its slighter affinity for colouring reagents. Another form, farther removed from the hæmoglobic cell, possesses a less abundant protoplasm, still less coloured and finely granular, a nucleus relatively large, more granular, and tinting still less than those of the last group. In the third form the nucleus occupies the whole, or almost the whole of the cell, as if its substance were diffused through the protoplasm. From the serial character of these forms Malassez concludes that they, and not the leucocytes of the blood, are the origin of the medullary hæmoglobic cells. The entire succession of forms may be regarded as a progressive development, resulting in the formation of an element which possesses in high degree a special function, that of respiration.

In the animals which possess nucleated red corpuscles the process of formation of these appears to resemble perfectly that of the hæmoglobic cells in animals which possess only non-nucleated blood-disks. The cells of origin are the same (and were partially recognized by Bizzozero and Torre), and they present the same transformations, nuclear and protoplasmic. The process does not, however, advance beyond the formation of the red cell. This does not bud, does not form globules; it becomes flattened and passes into the circulation, constituting itself the red corpuscle. Thus the nucleated and non-nucleated red corpuscles are not elements of identical nature, although belonging to the same family and fulfilling the same purpose.

Fuller details of these important researches are to appear in the next number of the *Archives de Physiologie*. The assertions of Malassez will, no doubt, meet with criticism; but he is to be congratulated on having furnished an explanation of the process of blood formation far clearer than any which has yet appeared.—*Lancet*, Jan. 14, 1882.

Mechanical Excitation of the Optic Nerve.

It is commonly believed that, like most other nerves, the optic is sensitive to mechanical stimulation, that thus sensations of light may be excited, just as they are by a similar stimulation of the retinal elements. The question has been recently re-examined by Schmidt-Rimpler, who comes to the conclusion that the current opinion is true, although the grounds on which it is based are not altogether correct. It is usually asserted that division of the nerve in enucleation of the eyeball causes a sensation of light. The fact is, however, doubtful. Rothmund, of Munich, has several times extirpated an eyeball without anaesthetics, and has never known the division of the nerve to cause a sensation of light. It is probable, however, that in many such cases the fibres of the nerve are totally degenerated. A more conclusive instance has been met with by Schmidt-Rimpler. A large part of the contents of one orbit had to be removed on account of epithelioma. The eyeball was healthy, and vision with it considerable, but it could not be saved. The patient was perfectly conscious when the nerve was divided, and was asked if he experienced any sensation of light, but replied in the negative. It is suggested that the supposed stimulation of the nerve on division was really a stimulation of the retina in consequence of the tension of the globe by its necessary fixation at the moment of division of the nerve. Another fact which has been advanced as proof that the optic nerve is sensitive to mechanical stimulation, is the sensation of light which may be produced by extreme lateral movements of the eyeball. It has been referred to the stretching of some of the fibres of the optic nerve. But Schmidt-Rimpler points out that the sensation thus produced is that of a circle of light with a dark centre, and that its apparent position corresponds nearly to the point of entrance of the optic nerves. It is difficult to conceive that the fibres which end near the disk have a course so separate from others that they are only stimulated when the nerve is stretched. It is more probable that the phenomenon is due to extension of the sheath of the optic nerve, which pulls upon the sclerotic around the entrance of the optic nerve, and so stimulates the retinal elements. The absence of reaction on division of the nerve does not, however, exclude altogether its mechanical sensibility, since other nerves, motor and sensory, which certainly possess this sensibility, may not react if quickly divided. That sensations of light may be produced by mechanical irritation of the nerve is shown by some observations made by Schmidt-Rimpler on persons from whom an eye had been removed not long before. A blunt instrument was pressed against that part of the orbit in which the stump of the nerve was situated. The observations were made in a room almost completely dark. Of six persons, in two pressure on this spot always caused a flash of light on the side of the enucleated eye. One of them averred that the sensation exactly resembled that which he had before experienced when the eyeball was galvanized. The same patients experienced a similar sensation when the stump of the nerve was galvanized. The negative result in other cases may be explained by more complete atrophy of the nerve, or greater retraction of the stump. These positive observations seem to establish conclusively the mechanical excitability of the optic nerve.—*Lancet*, Feb. 4, 1882.

"Alkapton" in Urine.

At the last meeting of the Medical Society of the King and Queen's College of Physicians in Ireland, Dr. GEORGE C. ARMSTRONG exhibited a specimen of the urine of a little girl, apparently in perfect health, whose mother he had attended three years ago in the worst puerperal convulsions he ever saw. The

mother remarked that the child's urine, although perfectly normal in appearance when first passed, on being allowed to cool assumed a deep colour, and stained the child's linen. He sent some of the urine to Professor Tichborne, who had made the following analysis: "The specific gravity of this urine at 60° Fahr. was 1025. Albumen was absent. It was acid to test-paper, and on standing gave a slight deposit, consisting of urate of ammonia and a little mucus. The urea was scanty, and not sufficient to account for the high gravity—it was 1.2 per cent., or 5.25 grains per fluidounce. This urine presented a great peculiarity; it contained a substance which is only met with occasionally, and which has been termed *alkapton*. Bödeker met with a case, and Lionel Beale mentions a case in which Dr. Johnson found it in the urine of an infant. This body stains the linen, particularly when the urine becomes alkaline. It behaves like sugar, and reduces copper, and probably it may be viewed in a somewhat similar light pathologically. Estimated as a sugar, it would give about eight grains to the fluidounce. The urine was examined for the bile reactions, but gave none." Dr. Armstrong said he put some of the urine into small bottles, and having hermetically sealed them, left one exposed to light and air, and put the other into a dark place. The latter specimen, after six hours, was not changed in any way.

The Vice-President (Dr. J. W. MOORE) said that, although this urine after a manner "behaved like sugar," as Dr. Tichborne's analysis stated, yet the reaction was very different. Under the influence of liquor potassæ, without the aid of heat, it struck a dark brown colour. Urine containing grape-sugar, according to his experience, did not change when liquor potassæ was added to it, except under the influence of heat. Again, with sulphate of copper the reaction of the urine was very incomplete—not at all so complete as that given by grape-sugar. The results of the microscopic examination of the deposit of the urine were completely negative; the deposit he experimented with consisted of a little mucus, epithelium, and a few small oil globules, the presence of which may have been accidental. Dr. Walter Smith tested, before the Society, samples kindly supplied to him, and pointed out that the results confirmed the statements originally made by Bödeker in reference to so-called "*alkapton*" in urine. These are—1. Strong alkalies darken the urine without the application of heat, and the coloration proceeds from the surface of the liquid downwards, *i. e.*, oxidation co-operates with the alkali. 2. Reduction, at least partially, of the copper test. 3. Non-fermentation with yeast. The term *alkapton* is, it is presumed, derived from *alkali* ἀπτεω (fasten or bind), from its relation to alkalies; but the word conveys no real information, and was given at a time (1861) when the physiological chemistry of the urine was very imperfectly understood. From various considerations Dr. Smith thought it probable the peculiar substance or substances in the urine exhibited belonged to the "aromatic series" of chemical compounds, the physiological relations of which group have been investigated with remarkable success during the past five years. Pending further investigation it would be premature to express a definite opinion on the subject in question.—*Med. Times and Gazette*, January 21, 1882.

The Formation of Bone.

The well-known experiments of SYME in Scotland and of OLLIER and DUHAMEL across the Channel long ago demonstrated the power of the periosteum in forming new bone. Ever since these demonstrations it has been a question whether the periosteum is the sole agent in forming the ossifying callus in cases of fracture; also whether the lymph in the medullary canal is formed *in situ*, or is forced in from without through the fissures in the bone (as maintained by Lebert and Maas).

Several series of experiments have been undertaken to settle this question, and hitherto the results arrived at have been somewhat opposing. Wegner and Busch, the one by giving phosphorus to young animals, the other by the injection of mercury into the nutrient artery of a bone, have obtained consolidation of the whole bone, while Ollier and Maas, in oft-repeated experiments on the effect of transplanting marrow under the skin, between muscles, and into a serous cavity, invariably failed to get new bone formations. Gonjon, Baikow, and Bruns have all repeated these transplanting experiments, and the two latter have obtained some very remarkable results. Baikow has only published a preliminary report of his experiments, but Bruns details his results, which closely agree with those of Baikow, to the last German Congress of Surgeons in Berlin.

Bruns used young animals for his experiments, and first removed a piece of the shaft of the femur or tibia, and then by squeezing it in a vice split it longitudinally, and was so able to remove a continuous cylindrical piece of medulla uninjured. This was planted in a freshly made wound under the skin, which was then carefully sutured. Out of sixty experiments in which the marrow was taken from one animal and transplanted in *another*, not once was any growth of bone found, but at the end of three to six weeks a mere shrunken trace was all that was left of the inserted tissue, which was at once destroyed by suppuration of the wound. Out of nineteen similar experiments, all performed on dogs, in which the excised marrow was planted in a wound in the *same* animal, three failed from suppuration, in four the marrow was simply absorbed without any other local result, and in the remaining twelve—or 75 per cent. of those cases where the marrow was not at once destroyed—a piece of bone about one-half the size of the transplanted marrow was formed. In these successful cases there was a good deal of swelling around the wound for a few days, but in about fourteen days this had subsided, and by puncturing the nodule left, bone could be detected. The ossification was found often to commence in several centres, which blended into one about the twenty-first to the twenty-fourth day. A microscopic examination of the specimens at various stages of development showed that during the first fortnight the marrow is infiltrated with cells which first appear at its circumference; these quickly assume spindle shapes, and lying in bundles divide the marrow into small communicating spaces. By the absorption of the round marrow cells and fat cells these spaces gradually shrink. At the end of this period the bone first appears, and with it are seen hyaline cartilage and osteoid tissue, and Bruns thinks the bone is formed partly directly from osteoid tissue and partly by the ossification of cartilage. The piece of bone that is ultimately formed has a compact outer layer, is cancellous within, and possesses all the characters of normal bone. But appearing in the cancelli in increasing numbers, as time passes on, are seen often very large giant cells, as if the process of bone absorption quickly followed bone formation, and might ultimately destroy the bone. It was found that the result was the same, whether young red or mature yellow marrow was transplanted, and also that if spongy bone tissue was used in the experiment scarcely a trace of bone formation was found, while after two or three weeks the trabeculae were thickly set with giant cells, and underwent absorption. These experiments show that bone marrow, when transplanted in uninjured continuous pieces into the same animal, not only has the power of forming cartilage and bone, but that, when not quickly destroyed by suppuration or absorbed, it does not form any other tissue. They so far set this question at rest. But the fact, that to succeed, the two parts of the experiment must be performed in the same animal, is of extreme interest, and seems difficult to explain.—*Lancet*, Dec. 10, 1881

Peptonuria.

The readiness with which the presence of peptone in the urine can be detected has led to further interesting observations regarding the production and fate of this substance. The latter has been further investigated by Hofmeister, to whom much of our knowledge on the subject is due. A solution of .3 or .6 gramme was injected into the blood of rabbits; about four-fifths appeared in the urine, but less if the peptone was injected under the skin. If larger quantities are given the effect is to cause a considerable fall in the blood pressure, which interferes with the excretion of the urine; but if the animal were killed, from 4 to 14 per cent. of the ingested quantity was found in the kidneys, while the blood contained only a trace. These large quantities (from one to nine grammes) had a considerable narcotic action. The practical question underlying these researches is the difference in the destination of the peptone absorbed from the alimentary canal and in that absorbed from the skin. Hofmeister believes that the lymph cells with which, during digestion, the adenoid tissue of the intestinal mucous membrane is filled, unite with the peptone and convey it into the blood, so that it passes through the circulation without being excreted by the kidneys. In harmony with this view is the fact which he has ascertained that during digestion a considerable quantity of peptone is accumulated in the wall of the bowel. According to this theory the colourless blood-corpuscles play a similar part in the supply of albuminous substances to the organism to that of the red blood-corpuscles in the supply of oxygen. It has been ascertained by Jakseh that peptone is frequently present in the urine in acute rheumatism. In twelve cases it was found during the course and subsidence of the joint affection. The more numerous the joints inflamed, the larger was the amount of peptone in the blood, and it was also increased in proportion to the rapidity with which the joint effusion was absorbed, either spontaneously or by the aid of salicylic acid. When the effusion had disappeared the peptonuria also ceased, but returned if a new effusion occurred, as soon as this began to subside.

This fact seems to be analogous to those observed by Hofmeister and Maixner on the occurrence of peptonuria during the absorption of purulent effusions, pneumonic infiltrations, and the like. It is probable that peptone is contained in the corpuscular elements in joint effusions, and that when these corpuscles pass into the blood rapidly and are destroyed, the peptone is liberated and appears in the urine. The same observer has recorded another very remarkable case of peptonuria. A female, aged twenty-seven years, had suffered all her life from a dermoid cyst of the ovary. The cyst had recently undergone a remarkable increase in size, apparently, from the resonance which was developed, in consequence of decomposition attended by the formation of gas. This was accompanied with grave illness and obstinate constipation. The tumour rather suddenly shrank, and the urine, which before had contained only a trace of albumen and no peptone, immediately became loaded with peptone, and continued so until the death of the patient a fortnight later. The section showed a bilocular dermoid cyst, adherent in many places to the intestines, and containing a quantity of gas, with fetid pulpy masses. In the latter were hair, epithelium, and plates of cholesterin. Similar masses were found in the abdominal cavity. The peptonuria was in this case apparently due to the bursting of the tumour, in consequence of which peptone was absorbed from the decomposing purulent masses in the abdominal cavity. The rupture became occluded, and the tumour again enlarged.—*Lancet*, Dec. 10, 1881.

Physiology of Urinary Secretion.

The theory of Ludwig as to the relation between the blood pressure and the activity of urinary secretion received decided confirmatory proof in the observation of Grützner, who found that irritation of the medulla, by which a great increase in the general blood pressure is produced, was without effect in increasing the secretion of the kidney because the renal vessels also were in a state of marked contraction; and that when the nerves of one kidney were divided and the medulla then irritated, secretion was increased in the kidney with divided nerves, and diminished in the gland in which the nerves were intact. The question was, however, again obscured by the statement of Grützner, that digitalis or strychnia injected into the blood suspended the secretion. This point has, however, recently been cleared up by Dr. GUSTAVE GARTNER (*Medizinische Jahrbücher*, Heft ii. 1881) who found that strychnia injections worked precisely like stimulation of the medulla, and that when the renal nerves, or one splanchnic, were divided, renal secretion was augmented, and that when strychnia was so administered as to produce a reduced pressure, the activity of secretion was diminished. It seems, therefore, Ludwig's views are still more firmly established.

Absorption from the Stomach.

The phenomena of absorption from the stomach have been studied experimentally by Tappeiner by ligaturing the pylorus of cats and dogs, and injecting into the stomach, by means of an œsophageal tube, certain quantities of definite solutions. Of grape sugar and sulphate of soda scarcely any was absorbed at the end of three hours. Even of peptone only one-tenth was absorbed. Strychnine remained unchanged in the stomach, whether the pylorus was tied or the vagi divided. If, instead of dissolving the strychnia in water, a weak alcoholic solution was injected, the result was very different. A solution of four centigrammes of strychnia in five cubic centimetres of ninety per cent. alcohol and fifteen cubic centimetres of water, injected into the stomach of a cat, caused death in ten minutes, and a similar result was obtained with a dog, the pylorus in each case being tied. In order to ascertain whether the ligature around the coats of the stomach influenced the absorption, the pylorus was occluded by introducing into it, through a gastric fistula, an India-rubber bag, which was then inflated. The analytical estimation of the absorption under these circumstances was attended with some difficulty on account of the tendency to vomit, but observations with toxic substances showed that absorption was rapid. A dose of chloral hydrate produced sleep in ten minutes, although when the pylorus was ligatured it had little or no effect.—*Lancet*, Dec. 24, 1881.

The Production of the Heart Sounds.

S. TALMA describes, in the *Archiv f. d. gesamte Physiologie*, xxiii. p. 275, an apparatus designed to illustrate the mode of production of the heart-sound. It consists of a tube with rigid walls which terminates inferiorly in a fragment of the pulmonary artery with its valves, and communicates with a bladder which can be compressed with more or less force, and thereby set in more or less rapid motion the column of liquid which fills the tube. With this apparatus he found that the sound produced varied with the height of the column of liquid, and thinks, therefore, that the cardiac sounds are dependent on the oscillations of the column of blood, and not on the oscillations of the valves.—*Revue des Sciences Médicales*, Oct. 1881.

MATERIA MEDICA AND THERAPEUTICS.

Resorcine.

Dr. CALLAIS, in his recent work on resorcine (*De la Résorcine et de son Emploi en Thérapeutique*), states that resorcine is a product obtained from benziue. Chemically it is closely allied to carbolic acid, and this suggested to Dr. Callais that they might have similar properties. The same idea occurred to Dr. Andeer. The results obtained independently by the two observers are almost identical. Resorcine was discovered in 1860 by Barth and Hlasiwetz, and its properties have since been investigated by Kærner, Oppenheim, G. Vogt, Brieger, Saltmann, Lichtheim, and O. Kahler. Its toxic power is less than that of carbolic acid. In the lower animals, a dose from 30 to 60 centigrammes per kilogramme produces trembling, clonic convulsions, and acceleration of respiration and circulation, all of which disappear in an hour. Sensibility and consciousness remain intact. Above 60 centigrammes per kilogramme intense vertigo and loss of consciousness ensue, sensibility is impaired, clonic convulsions are violent and frequent, and are localized chiefly in the anterior portion of the body; the pupils are dilated, and the pulse and respiration are accelerated. These symptoms last for one or two hours. With doses of from 90 centigrammes to a gramme per kilogramme death ensues in half an hour. *Post-mortem* rigidity ensues in a quarter of an hour. The author points out that resorcine is a powerful excitant of the nervous system. It exerts no influence on the blood. Resorcine may be used externally or internally in all diseases due to germs, or which favour their development. It has many advantages over carbolic acid; as, for example, its great solubility, its freedom from smell, and its non-irritating properties. A hope is expressed that it may to some extent replace carbolic acid in antiseptic surgery. [Resorcine may be a very useful drug, but the largest doses sometimes recommended should not begin without a certain amount of caution.—*Rep.*—*Lond. Med. Rec.*, Jan. 15, 1882.]

Podophyllin and Podophyllotoxin in Children's Diseases.

Dr. BRAUN (*Arch. f. Kinderheilkunde*, II. 6 and 7) says that podophyllin in adults acts as a purgative in doses of a grain and a quarter or less after several hours. It causes increase of the peristaltic movement, and also of the intestinal secretion. The proof that it increases the peristaltic action is that small doses cause desire to go to stool only; that often before a motion is passed the increased peristaltic movement may be perceived both subjectively and objectively, and the first motions are often firm. It has been used in chronic constipation and in liver diseases. In children of thirteen years, in doses of one-sixth to one-half a grain, it causes one to three loose motions, frequently preceded by firm motions after four to twenty-one hours, and in the next two or three days the motions are generally soft or loose. The general dose for children under a year is one-thirtieth to one-sixth of a grain; for children of one to four years one-sixth, and for older children one-third. The dose, however, depends less upon the age of the child than on the duration of the constipation. These doses cause no disturbance. A single dose is often sufficient to produce soft motions for a considerable time. If not, the dose may be given at bedtime for several nights together. Podophyllotoxin is prepared from the chloroform extract of the root. It is more certain than podophyllin. The doses are—for children under one year, about one-sixtieth to one-thirtieth of a grain; up to four years one-thirtieth to one-fifteenths, and above that one-tenth to one-eighth of a grain. It is most conveniently given

in solution; three-fourths of a grain of podophyllotoxin are dissolved in about a hundred drops of rectified spirit. Of this solution two to ten drops are given in a teaspoonful of syrup.—*Practitioner*, Jan. 1882.

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Physiological Action of the Asclepias Curassavica.

We read in a recent number of the *União Medico*, of Rio Janeiro, that Dr. Guimaraes has made a series of experimental investigations on the physiological action of the *Asclepias curassavica*—a common plant in Brazil, and known to European botanists under that name, and also in England under the name of *bastard ippecacuan*. Dr. Guimaraes made twenty-five experiments on various animals, such as dogs, rats, guinea-pigs, etc., and he obtained some well-marked results, among which were the following: The active principle is a cardiac poison, resembling digitalis in its action; and, like almost all such poisons, the *asclepias* affects all the striated muscles, and causes them to lose their contractility. It does not exercise any injurious action on the nervous centres presiding over the life of relation, nor on the sensitive or motor nerves. An alcoholic solution of the roots, injected into the veins, immediately causes a great constriction of the small vessels, resulting in a considerable increase of blood-tension in the large ones, and a more or less rapid reduction of the normal temperature. It is an excitant of the vaso-motor centres. Besides these primary effects, the *asclepias* produces others which are secondary, among the most notable of which are disturbances of respiration, from a state of slight dyspnoea to great orthopnoea; and disorder of the digestive system, marked principally by vomiting and diarrhoea. The solution obtained by maceration from the stems and the roots acts on the heart and the vessels, but with unequal intensity—that from the stalks exercising a more marked and rapid action on the heart than the solution from the roots; but the reverse takes place when the action is exerted on the vaso-motor centres.—*Medical Times and Gazette*, Dec. 3, 1881.

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Inhalation of Medicated Vapours in Diseases of the Respiratory Apparatus.

After an attentive and minute study of this important question in therapeutics Dr. GUILLEMIN gives the following *résumé* of his observations (*Arch. Méd. Beligiques*, Juillet, 1881):—

1st. Certain affections of the respiratory mucous membrane can be advantageously treated with medicated vapours.

2d. In the first period of acute inflammation the pain and cough dependent upon the irritation and dryness of the mucous membrane can be rapidly allayed by warm aromatic vapours.

3d. This action is much increased when a small quantity of one of the volatile sedatives, such as ether, cherry-b Laurel water, or hemlock, is added to the liquid serving for inhalation.

4th. Frequent inhalations of the terebinthines, when commenced at the first period of inflammation, can arrest the progress of the disease.

5th. Vapour of iodine exerts an irritant action on the mucous membrane of the air-passages, and increases the secretion and tendency to cough.

This irritant action can be utilized:—

a. To diminish the swelling of the mucous membrane, by causing the inflammation to pass from the first into the second stage. This indication exists above all in cases where the inflammation is seated in the small tubes, and by the swelling interferes with the sufficiency of respiration.

b. To diminish the tenacity of the morbid products of secretion by stimulating an increased formation of mucus.

c. To provoke coughing, and so relieve the air-tubes from accumulated products of secretion.

6th. It is not only by its irritant properties that the vapour of iodine is capable of modifying the respiratory surfaces, it also possesses the power of arresting purulent secretion and of preventing decomposition. Therefore, when the respiratory mucous membrane furnishes a purulent secretion resulting either from the third stage of an acute inflammation or from a chronic inflammation, iodine serves to diminish the quantity of pus formed, and, finally, to completely alter the character of the secretion, restoring it to its normal mucous character.

7th. Although liquid spirit of turpentine is an irritant for surfaces with which it comes in contact, inhalation of its vapour is readily supported by the respiratory membranes, causing only a moderate irritation, and rarely producing spasms of coughing.

8th. This vapour is of value in diminishing the quantity of secretion and augmenting its consistence.

9th. It can completely arrest the formation of pus, when inhaled sufficiently often in suitable cases, and is indicated in all affections of the respiratory mucous membrane accompanied by a profuse formation of a muco-purulent secretion. It should, on the other hand, be avoided when there is difficulty of expectoration from too great tenacity of the secretion.

10th. In cases where the secretions are at the same time very abundant, and very tenacious, alternate inhalations of iodine and turpentine vapour, commencing with the former, serve to rapidly diminish the quantity of the secretion without increasing its tenacity.

11th. Inhalations of turpentine are indicated in hæmoptysis, especially when of moderate intensity.—*Journ. de Méd. de Paris*, Dec. 24th, 1882.

— *Naphthalin as a New Antiseptic.*

Dr. FISCHER, Privat-docent, of Strasburg, strongly recommends (*Berliner Klin. Woch.*, November 28) naphthalin ($C_{10}H_8$) as a most energetic and cheap antiseptic and “antibaeteritium.” Urine exposed to a local naphthalin atmosphere will remain clear for a week, no minute organisms developing in it; while a fluid, on the surface of which fungus formations have occurred, ceases to produce these in a similar atmosphere. Offensive wounds and ulcers, on powdered naphthalin being sprinkled over them, in a very short time cease manifesting any bad odour. This produces no pain in the wound, is not absorbed by it, favours granulation, and does not excite eczema of the surrounding skin. Deep wounds, abscesses, etc., may be filled with it, just as is the case with iodoform, without any ill effect being produced. The naphthalin is insoluble in water and by the secretions at the surface of wounds; but it is easily soluble in ether (one part to four), and this mixed with alcohol forms a suitable means of impregnating the materials for dressings, such as gauze, etc. In order to impregnate gauze at the rate of 10 per cent. of naphthalin, 100 parts of naphthalin, 400 of ether, and 1200 of alcohol may be employed. The rapid evaporation of the ether and alcohol allows of gauze which has only been prepared a short time before the visit to be at once applied; and the only objection to applying it while still wet is the unpleasantness of the cold produced by the evaporation. By means of the above mixture, from thirty to forty metres of gauze may be impregnated at a cost of 1s. 9d., the cost of naphthalin being 1s. 3d. per kilogramme, contrasting with the prices of some recently recommended antiseptics, such as iodoform at 30s. or 40s., salicylic acid at 15s., thymol at 50s., resorcin at 50s., chinolin at 60s., etc. The easy miscibility of naphthalin with fatty matters, vaseline, etc.,

should render it, in the form of ointment, serviceable in diseases produced by vegetable or animal parasites.—*Med. Times and Gazette*, Dec. 17, 1881.

Transfusion of Blood.

M. HAYEM has chosen this subject for his course on Experimental Therapeutics in the *Faculté de Médecine de Paris*, and has reached some interesting and valuable conclusions. His experiments are principally concerned with the comparative value of normal and defibrinated blood, and natural and artificial serum. He finds that in cases where, after an abundant hemorrhage, the animals were collapsed, but not condemned to certain death, recovery can be rapidly and completely produced, not only by the transfusion of defibrinated blood, but by the injection into the bloodvessels of any liquid which will not destroy the blood-corpuscles. When, however, the animals enter upon the stage of general convulsions, and are certainly at the point of death, the nature of the fluid then used is of the greatest importance. With defibrinated blood the animals may revive, but the improvement will be only temporary, and death will occur after a few hours; artificial serum seems to act in the same manner, it can produce transient improvement, but not ward off death. Natural serum, on the other hand, can occasionally produce a permanent recovery; while blood drawn directly from the vessels of another animal produces the most favourable results. In transfusion for chronic anæmia in man defibrinated blood appears to be quite as effective as the non-defibrinated.—*Revue Scientifique*, Jan. 7, 1882.

Laughing Gas as an Anæsthetic during Labour.

In a paper recently published in the *Archiv für Gynäkologie*, DR. STANISLAUS KLIKOWITSCH, of St. Petersburg, advocates the use of nitrous oxide for the purpose of obtaining anæsthesia during labour. He has employed a mixture of four parts of nitrous oxide and one of oxygen, kept and supplied under a sufficient pressure to make its density the same as that of atmospheric air. The author has a miniature gasometer, in which he stores it; for obstetric purposes he carries it in an India-rubber bag, which he puts under the pillow of the patient. The advantages which he claims for it are the following: 1. Its use is quite free from danger, either to mother or child; and has no unfavourable effect in prolonging labour, contrasting in this respect advantageously with chloroform. 2. It without doubt does away with pain in all the stages of labour. 3. By means of this mixture complete anæsthesia can be obtained without loss of consciousness, and therefore without diminishing the action of the voluntary muscles: the fullest possible power is thus available for the expulsion of the child. 4. Absence of vomiting, and often, if vomiting have begun, relief to this symptom; absence also of any period of excitement, and of the after-consequences of anæsthetics—nausea, headache, dyspepsia, etc. 5. The anæsthesia can be continued throughout the whole period of labour, without any cumulative effect; since during the intervals of pain the effect of the preceding inhalations completely passes off. 6. The presence of the medical man is not indispensably necessary for the administration of this anæsthetic. The chief objections to the use for this purpose of nitrous oxide are its comparative costliness, and that the gas and the necessary apparatus are not so portable as could be desired. We should be inclined ourselves to dissent from the statement which the author puts sixth in his list of advantages.—*Med. Times and Gaz.*, Jan. 7, 1882.

Uses and Dangers of Iodoform.

MIKULICZ (*Wiener Med. Wochenschrift*, 1881, No. 23) gives the results of the use of iodoform in Billroth's wards. He claims that it is in antiseptic qualities equal to carbolic acid, is more easily used, and less apt to cause constitutional disturbance by absorption. Symptoms of poisoning are, however, seen in rare cases, and in the *Deutsche Med. Woch.*, 1881, No. 34, A. HENRY describes two fatal cases. (See p. 460 of last volume of this JOURNAL.) The symptoms are of the narcotico-irritant type.

In open wounds the iodoform is sprinkled on the surface and covered with lint and gutta-percha tissue, fixed by a bandage. The results have been very satisfactory; the dressings require changing but seldom, discharge is slight, decomposition never occurs, and there is rapid formation of healthy granulations. In incised wounds healing is even more certain than with carbolic acid, and there is much less fear of absorption causing constitutional disturbance.

Wounds implicating mucous surfaces, as of the mouth or rectum, are usually very difficult to treat antiseptically. In such cases iodoform, applied on gauze compresses, has been found to completely prevent offensive smell, and to cause no discomfort to the patients.

In a case of removal of an abdominal tumour, iodoform was sprinkled into the cavity and the wound closed at once. The patient recovered without a bad symptom.

In septic gangrenous or sloughing wounds the results were especially satisfactory. Sprinkling with iodoform removed all smell in from four to six hours, and the wounds healed rapidly and without discharge, even in some cases where severe constitutional symptoms had already appeared.

In strumous diseases iodoform is said to give such brilliant results as almost to entitle it to the rank of a specific. (See also V. Mosetig-Moorhof in *Wien. Med. Woch.*, 1881, No. 13.) Fungating ulcers, with spreading undermined edges and offensive discharge, healed rapidly and completely under a thick layer of iodoform.

In lupus also its effects are gratifying. Riehl (*Wien. Med. Woch.*, 1881, No. 19) gives the results of twenty cases in Kaposi's clinique. The epidermis, when necessary, having been removed by the application of 5 to 10 per cent solution of caustic potash, the iodoform is laid on in a layer several millimetres thick, and fixed as above described. On removal of the dressings in from three to eight days the disease is found completely removed, redness and swelling gone, and the sore skinned over.

In deep wounds, when the powder would be difficult to apply, Mikulicz recommends pencils composed of one part of iodoform to two of cacao butter, and for injection a 20 per cent. ethereal solution. The smell of the drug can be overcome by adding 1 M bergamot to 10 gr. of the iodoform, or moistening with an ethereal or alcoholic extract of Tonquin bean. Local irritation can be effectually prevented by previously oiling the sound skin near where the iodoform is to be applied.—*Glasgow Med. Journ.*, Jan. 1882.

The value of iodoform as an external application in venereal and syphilitic affection has led Dr. THOMANN of Graz to test its value in subcutaneous injection. He employed a dilution of six parts of iodoform to twenty of glycerin, and also a solution in almond oil. He commenced with doses of .3 gramme, gradually increasing the quantity to .75 gramme. In cases of early constitutional syphilis the symptoms rapidly subsided after ten or twelve injections in various parts of the body. No local suppuration was produced. A little pain was sometimes caused, which soon passed away. Rather more reaction followed the solu-

tion in oil, especially if the latter was not freshly prepared. An excretion of iodine by the urine could be demonstrated in the first two days after the injection, but no odour of iodoform could be perceived in the expired air, perspiration, or urine. The general health was not disturbed, and the dose employed had no narcotic action, and no effect on the temperature or pulse. Since iodoform is coming into increased use, it is well that the occasional occurrence of unpleasant symptoms from its employment should be known. Oberländer, some years ago, described a case in which a woman had taken forty-two grammes of iodoform in eighty days, and then had a sudden attack of giddiness, weakness in the legs, and double vision, followed by a period of excitement, interrupted by broken sleep, with headache, sensations of impending death, constant convulsive movements, and irregular respiration. After improvement, the resumption of the iodoform was at once followed by a relapse.

In a recent paper in the *Allegemeine Wiener Med. Zeitschrift* two cases in which an eruption was the apparent consequence of the external use of iodoform have been recorded by Zeissl. An ulcer on the leg of a boy three years of age was dressed with iodoform, the dressing being several times changed in the course of a fortnight. At the end of that time the temperature suddenly rose to 105° , and a diffuse erythematous eruption appeared on the flexor aspect of the upper part of each arm and the inner side of each thigh. The affected areas were bright red in colour, the intermediate parts of the skin being normal. The child was somnolent and vomited some greenish-yellow masses. On the third day after the removal of the iodoform the temperature became normal, and the exanthem gradually faded. During its existence the urine gave a distinct iodine reaction and contained some albumen and renal epithelium. The applications of iodoform being resumed, another precisely similar attack occurred, attended with the same elevation of temperature and albuminuria, disappearing five days after the cessation of the iodoform dressings. Ultimately, however, tolerance of the iodoform was established. In another case iodoform was applied to a fistula connected with carious bone. After a week the patient was attacked with an eruption like urticaria, sharply circumscribed prominent red spots surrounded by reddened skin. Some of the raised spots had a diameter of two centimetres. They were especially abundant on the flexor aspects of the limbs. The urine contained no albumen. The application of iodoform was discontinued, and the eruption subsided in the course of a week. With regard to the occurrence of albumen in the urine in the first case, Zeissl remarks that iodine in toxic doses has before been known to cause albuminuria; and that it is desirable always to watch the urine in cases in which iodoform is applied as a surgical dressing.—*Lancet*, Jan. 7, 1882.

Of the uses of iodoform in the treatment of soft chancre, little or nothing needs to be said. It is generally acknowledged that, except in those rare cases in which considerable pain is produced, or in those rarer ones in which its application appears to excite inflammation, the mere dusting of the powder over the sore is almost sufficient to insure a healthy action. Its employment has certainly considerably reduced the duration of this disease, and has done away with the necessity of such painful applications as fuming nitric acid to the exquisitely tender surface. In the out-patient practice of a hospital the use of iodoform will soon banish that most offensive class of cases, the stinking ulcers of the leg. We have long been in the habit of using an ointment composed of iodoform, eucalyptus oil, and vaseline, which has the advantage of enabling the patients to keep their ulcers aseptic whilst changing the dressing themselves daily. It must be owned, however, that this ointment has occasionally set up a rather severe form of dermatitis, due possibly to the fact that iodoform, when dissolved in an essential oil, is apt to undergo decomposition into products of a very acrid nature. Another

excellent method of treating ulcers of the leg is to dust the powdered iodoform over them, and then to apply over the sore a piece of the oiled silk protective, and over this a mass of the iodoformized cotton. A firmly applied bandage securing this combines the advantage of a uniform and continuous elastic pressure with that of asepticity. If an ointment such as that described above be employed, and if the patient be directed to use a 5 per cent. carbolic lotion when changing the dressing, it will be found that many smaller abscesses will also remain quite aseptic, though the dressings be frequently changed between the times at which the patient is seen by the surgeon; but if this is to be attempted, it is advisable to incise freely, and thus dispense with the necessity of the drainage-tube. Very similar is the application of the drug to burns; an extensive stinking burn may be purified by a single application of the powder; we have ourselves employed it in such cases with the greatest possible benefit, and it may be remarked that if it be intended to dress the burn with protective and boracic lint (a most excellent application in such cases), the use of the iodoform gives this great safeguard, that, supposing a spot of putrefaction be left beneath the protective, or putrefaction spread inwards beneath the edge at the part from which the greater part of the discharge escapes, the mischief does not extend itself, but is limited or subdued by the iodoform in its neighbourhood. In this connection it may also be observed that it is extremely useful in cases of otorrhœa, ozena, ulcers of the septum nasi, etc. In the treatment of these diseases it may be applied either alone or in combination with any other powder, the employment of which the particular case may render advisable—bismuth, tannic acid, oxide of zinc, or what not. It is easy to blow the powder up the particular part in question, and we would suggest that by means of a speculum it might be used in a similar way in the treatment of vaginitis, though we do not profess to speak on this subject from experience; it may be suggested, however, that a plug of iodoform cotton, inserted into the vagina, might enable the surgeon to perform a strictly aseptic abdominal section in a case where it was impossible to avoid interfering with the vagina or the uterus.

The iodoform cotton is an introduction from Germany; and consists of absorbent cotton-wool which has been thoroughly impregnated by means (we believe) of soaking it with an ethereal solution of the drug. An absorbent lint has been prepared in the same way. This may be advantageously applied to a variety of wounds and sores; but its efficacy is particularly manifested in wounds about the perineum, say, *e. g.*, a hernia. Thus the operation may be performed with the strictest antiseptic precautions, but instead of putting on a gauze dressing, the parts are enveloped in a mass of the cotton, a wise precaution being to previously smear the surrounding hairs with some iodoform ointment. If the stitches are of catgut the dressing may be left on for a week, at the end of which time the drainage-tube may be removed; the stitches, if they have not become absorbed in their deeper parts, may be either taken away or left, as desired, and the second (which will probably be the final) dressing applied. It cannot fail to be observed that this greatly increases the possible field for the performance of antiseptic operations in the country.

The Germans are using the drug in a most wholesale way—we had almost said reckless, because it seems very doubtful whether its use is advisable in many of the cases for which they now employ it, and still more doubtful whether these very large amounts are any more efficacious than smaller quantities; while it is certain that several cases of death have been reported, some of which probably, and others certainly, were due to its toxic effects. We need not again refer to the character of the symptoms of iodoform poisoning; but we shall have done enough to justify our first proposition when we say that cases are on record where,

after scooping out a cavity in a carious bone, as much as 120 grammes were placed in the whole (which, it will be remembered, represents 1800 grains), and even larger quantities have, we believe, been introduced. A good idea of the way in which iodoform is being used will be gained by reading an elaborate article by Mikulicz in *Langenbeck's Archiv*, xxvii. page 196, which describes the state of things at Vienna. It is there stated that it is not only employed in such cases as those we have described, but to operation-wounds which involve any of the cavities of the body, and also to all recent wounds whatever. For the former class of cases, as well as in some others, it has been found useful to make the iodoform into a paste with resin or some other substance; this can be inserted into a sinus or packed into a cavity, such, *e. g.*, as a wound in the mouth. A similar use of the drug was, it will be remembered, made by Mr. Watson Cheyne in his iodoform bougies for gonorrhœa. The advisability of its application to recent wounds we venture very seriously to doubt. Indeed, while fully appreciating the immense utility of the drug, we think it quite possible that enthusiasm in its favour is carrying our German brethren too far. It is not quite clear whether its antiseptic qualities are really equal to its disinfecting power, and we must be careful how we trust too blindly to it in this respect; some experiments by Mikulicz himself are sufficient to raise a doubt on this point. He mixed the powder with samples of various putrescible fluids, and stirred them up daily, and yet he found that, though much delayed and diminished, fermentative changes took place in these fluids unless the proportion of iodoform was, comparatively speaking, large. Again, it has been assumed that iodoform exerts a specific action upon the tissue of lupus or tubercle; this has led to its very free employment to the scraped surfaces of supposed tubercular disease of joints and bones, and to lupous affections of the face, etc. That it is very useful in such cases none can doubt, but that its wholesale employment is to be recommended is very doubtful indeed; and that it exerts this specific action is now not maintained by many who some time ago were very positive upon the point.

More might be added, but we have reached the limit of our space, and, in conclusion, would repeat the word of warning—we are not yet fully aware of the true antiseptic qualities of iodoform, and we do know that it does under certain circumstances produce very serious, and, indeed, actually fatal results. Of its internal administration we can say nothing from personal experience, and, therefore, will not venture upon this part of the subject.—*Med. Times and Gazette*, Jan. 14, 1882.

MEDICINE.

Case of Acute Miliary Tuberculosis exactly simulating Typhoid Fever.

SENATOR details in the *Berl. Klin. Woch.* (June 20, 1881) the case of a male patient, aged 42, a messenger, who had all the appearances of typhoid fever (including rose-coloured spots), but *post-mortem* was found to have been suffering from generalized miliary tuberculosis, the Peyer's patches being unaffected. He had been in the hospital before for severe typhoid fever, from Sept. 25 to Nov. 5, 1877, and was discharged cured; well in the interval. In the first days of Sept. 1880, he was taken with slight shivering, pains over the liver, and dyspnoea, and was several days in bed. Afterwards, he had weakness, loss of appetite, and feeling of fulness in the epigastric region. These symptoms increased ten days before his admission, and the pains over the liver especially so. There

was no jaundice, nor fever. His family history was good. He had had no previous illness until the before-mentioned typhoid; and had led a temperate life. On admission, he was a fairly well-formed and well-nourished man, with no appearance of cachexia. The epigastrium was painful on deep pressure, especially towards the right. Neither the spleen nor the liver was enlarged; there was nothing unusual in the circulatory and respiratory systems (no cough nor expectoration); tongue coated white and moist; constipation; the urine not albuminous, cloudy from urates. Pulse 80 to 84. Temp. 100.4° F. Four days after (Oct. 29), he had moderately high fever, with considerable remissions in the morning; the spleen was enlarged. On Oct. 31, there were observed for the first time several quite distinct roseolar spots. Next day, there were more spots; the abdomen was distended; he had bleeding from the nose, and, on Nov. 16, much bleeding from the nose and mouth. On Nov. 17, on the back of the right hand were several painless patches of erythematous redness, of the size of a florin. For the three or four days preceding death, there were cyanosis, and swelling of the left parotid gland; and pus was expressed from the duct. Death occurred on Nov. 22. The fever-curve, swelling of the spleen, and rose-coloured spots led to a diagnosis of typhoid fever. No doubt, he had had typhoid three years before; also the morning remissions of the temperature were extreme, and in the fourth or fifth week the high temperature still continued. At that time, miliary tuberculosis was thought of, and the fundus of the eye was searched for tubercles unsuccessfully. Finally, when suppuration in the parotid occurred shortly before death, all doubts about the case being one of typhoid disappeared. *Post-mortem*, there was not a trace of typhoid fever, nor any evidences of the typhoid three years before. But there were miliary tuberculosis of both lungs (the lung-substance being otherwise normal, except in the upper lobe on each side, where there was an indurated and contracted spot), tuberculosis of the bronchial glands, which were much enlarged and partly caseous, of the spleen, of both kidneys, and of the liver. The head was not allowed to be opened. The second part of the communication is occupied with a discussion of the case, and of the already recorded cases that come nearest to it.—*Lond. Med. Record*, Dec., 1881.

Pathology of Tubercle.

DR. SIDNEY COUPLAND gives the following summary of the present state of knowledge on this subject:—

1. Tuberculosis is an infective disease to which man and the higher animals are liable.

2. It is characterized anatomically by the formation of minute nodules or "granulations," composed of elements like those met with in granulation-tissue, the result of simple reparative inflammation.

3. These nodules, or elementary or primary "tubercles," may occur in an isolated manner, or, by their confluence, may form larger or smaller conglomerate masses.

4. The typical structure of each fully formed primary nodule consists in (a) a collection of lymphoid round cells, inclosed in a delicate fibrillar meshwork or stroma; (b) in an internal zone, more or less evident, of larger nucleated epithelioid cells; and (c) a central multi-nucleated or giant cell.

5. These "tubercles" arise apparently in connection with the lymphatic tissue that pervades the body. No region is exempt from them. They may occur in the substance of organs, in the bones and muscles, in serous membranes, as the pia-arachnoid, pleura, pericardium, and peritoneum; in synovial membranes; in

mucous membranes (arising in the submucous stratum), as in the mouth, pharynx, larynx, trachea, bronchi, intestines, and genito-urinary tract.

6. Being ill supplied with bloodvessels, they can only attain a certain size, and then perish. The central cells degenerate first, because they are the farthest removed from the nutrient blood stream, and mutual pressure due to their increasing growth hampers their vital activity. They become fattily degenerated, soft, opaque, caseous, forming "yellow" tubercles, which, when isolated, are larger and manifestly of older formation than the miliary translucent gray granules. Where such tubercles are confluent, larger and more irregular caseous masses are formed. Caseation may pass into cretification. On the other hand, there is no doubt that occasionally the tubercular nodules take on a fibroid change, passing from the stage of "granulation-tissue" to one resembling "cicatrical tissue."

7. Almost invariably there occurs, in the vicinity of the tubercular formation, some reactive inflammation. This may be protective by ultimately leading to encapsulation by fibrous tissue of the caseated tubercular foci; or, as more frequently happens, it aids in the disintegration of the surrounding tissues, and leads, with the necrosis of the tubercles themselves, to destructive ulceration.

8. Individuals who are prone to the development of tubercle are called "tubercular." The disposition may be inherited. Probably what we recognize as "struma" or "scrofula" is only one form of this: a tendency to tuberculosis of lymphatic glands especially; just as in phthisical subjects we have a tendency to pulmonary tuberculosis.

9. The tubercular manifestation is, in the majority of cases, at first local, *i. e.*, limited to one organ tissue. It may remain so limited throughout life—may not even endanger life—or may lead to death by the local destruction to which it gives rise. On the other hand, it may be more or less widely diffused throughout the body of the same individual. The diffusion may be due sometimes to the simultaneous development of tuberculosis in many parts. More frequently it is due to secondary dissemination, by a process of infection.

10. This dissemination takes place, as in cancer, in two ways, *viz.*, by direct extension, or infection of neighbouring tissues by contiguity; and by general distribution of the tubercular virus through the medium of the blood-system (including lymphatics).

11. The tubercular virus seems to be most potent, or, at any rate, to retain its potency, *i. e.*, its infective property, in the caseous state.

12. Examples of the local extension of tubercle, or of propagation by contiguous infection are seen: (1) in the development of peritoneal tubercle from intestinal;¹ (2) in the spreading of tubercle from one part of an organ (*e. g.*, lung) to another part; (3) in extension from lung to pleura;¹ (4) in bronchial, laryngeal, and intestinal ulceration excited by the passage over their mucous membrane of material expectorated from a phthisical lung; (5) in tuberculosis of bladder and vesiculae seminales following upon renal or testicular tubercle, etc. The mode of its local extension approximates tubercle to the neoplasms, *viz.*, by its elements exciting in the tissue they infect changes leading to the formation of cell-masses resembling the primary focus.

13. The generalization of tubercle is shown in the disease known as acute miliary tuberculosis, which is characterized by an eruption of miliary granulations in diverse organs and tissues. Its mode of occurrence may be (as above) compared to the general dissemination of secondary cancer, or, perhaps with equal truth, to the metastatic suppuration of pyemia. With few exceptions, it appears to necessitate a primary tubercular focus to give rise to it. It is believed that the

¹ In these cases, probably by extension along lymphatic channels.

infective virus, whatever it be, enters the blood-stream at this local focus, and is thence widely disseminated, the resulting growths being for the most part miliary, gray, and translucent; life not, as a rule, being prolonged for a sufficient length of time after the occurrence of the generalization to permit of the growths becoming confluent or caseous. As the membranes of the brain are generally involved in this widespread infection, death occurs early.

14. Lastly, tuberculosis is inoculable. In this respect, it resembles pyemia, and differs from the cancers; for there is reason to think that it may be and is communicated from one human being to another, *e. g.*, from husband to wife, and *vice versa*; and that it can be inoculated in animals from man (artificial tubercle). There is, further, a possibility, based on certain peculiar morphological resemblances of the formations, that bovine tuberculosis is communicable to man.

15. If the foregoing data be true, it follows that tuberculosis is an infective disease, probably due to the presence of a virus, which gives rise to the development of peculiar tissue-formations, capable of localized or general propagation in the body, and characterized by their tendency to early disintegration.

16. Until the nature of the virus is known, it is impossible to formulate data concerning the conditions under which the disease arises in subjects free from inherited taint.—*Brit. Med. Journ.*, February 11, 1882.

Pernicious Anæmia.

In a series of cases of pernicious anæmia RIESS has found in the bone marrow an abundance of cell elements of a special character, which have rarely been met with. Besides the usual abundant colourless round cells and the nucleated red blood-corpuscles, there were many large cellular structures containing blood-corpuscles, such as have been hitherto described only by Cohnheim, and by Gardner and Osler. They were roundish or oval cells, with a refracting clear hyaline or slightly granular stroma. Their size varied considerably; the smaller were not more than twice as large as ordinary red blood-corpuscles, while the larger were eight times as large. The coloured elements which were contained in these cells also varied much in size and in number, ranging from one to twelve. When few, they resembled closely the ordinary red corpuscles, but more frequently they were smaller, darker, and more spherical, resembling the so-called microcytes. When very numerous they resembled rather fragments of red corpuscles aggregated in irregular groups. Sometimes these small elements were fused together in irregular masses. The nucleus of the containing cell was often concealed by them; and they sometimes occupied so large a part of the area of the cell that the protoplasm of the latter was reduced to a narrow circumferential zone. The number of these large cells in the bone marrow varied in different cases. Usually they were as numerous as the nucleated red blood-corpuscles, and sometimes exceeded these in number. They were found in five out of seven cases of pernicious anæmia examined. Of the two cases in which they were not found one was not a pure case, being complicated with an affection of the kidneys, and, in both, circumstances prevented a very thorough microscopical examination. These bodies, on account of their supposed rarity, have hitherto been regarded as arising from the destruction of red blood-corpuscles. In favour of this view are the form and colour of the contained corpuscles, which so often resembled fragments of corpuscles. But on this view the frequent appearance of these cells in pernicious anæmia is not easy to harmonize with Neumann's theory, according to which the bone marrow in this disease is the seat of an increased formation of corpuscles. It must be assumed that there is a corresponding increase in the destruction of cells in the lymphoid medulla. In accordance with this the blood-corpuscles in

the marrow were found in one case to present only the aspect of microcytes, which is usually regarded as a late stage of the red corpuscle. It appears also that, according to the recent observations of Grohó, similar cells are to be found in the bone marrow in other diseases besides pernicious anæmia.—*Lancet*, Dec. 17, 1881.

Miner's Anæmia.

In a communication to the Académie des Sciences, M. Perroneito has described an anæmia which occurs among the miners of St. Etienne, and which resembles closely the disease observed among the workmen at the St. Gotthard tunnel, and found to depend on the anchylostoma duodenale. Examination of the stools of three patients at St. Etienne revealed in each large numbers of the ova of anchylostoma. This observation proves the identity of the two diseases. The same parasitic affection has been met with among the miners of Schemnitz. "Miners' anæmia" is thus brought into the class of preventable maladies, since it may be prevented or cured by the employment of substances which have been found capable of destroying the ova either outside or within the human body. The larvæ do not develop in the intestine, but in the fecal substances after defecation, and penetrate the organisms by the air or water after their development. In no stage can an organism resist a temperature of 50° Centigrade, and the larvæ are quickly killed by concentrated solution of chloride of sodium, in sulphuric or hydrochloric acid, in ethylic alcohol, or in one to five per cent. solutions of carbolic acid, and in one-half per cent. solution of thymic acid, and in ethereal extract of male fern. By any of these means the fecal larvæ can readily be destroyed. The male fern given internally is always effectual, even in a single dose. Thymic acid may also be given by the mouth for the same purpose.—*Lancet*, Jan. 21, 1882.

Cells Containing Red Blood-Corpuscles.

Dr. OSLER, of Montreal, refers to the observations of Riess as to the presence of these elements in the bone marrow in pernicious anæmia. Dr. Osler has noted their occurrence in the lymphoid marrow in this affection; in three cases very abundant, in two in moderate numbers. An examination of the marrow in over seventy-five persons of all ages and dead of various diseases has led him to conclude—1st, that cells containing red blood-corpuscles are normal elements in red marrow; and 2d, that it is impossible to connect their presence with any particular disease. He has found them very numerous in cases of phthisis (2), pneumonia (1), typhoid fever (2), ulcerative endocarditis (1). They were present in the marrow of a fetus at the sixth month, and in that of the sternum of an old man of seventy-six. He does not remember ever having any difficulty in demonstrating them to students in the ordinary red marrow of the rib. Litten and Orth¹ speak of these cells as occurring in a considerable proportion of the cases which they examined, and they also could not connect their occurrence with any special set of conditions. As in the spleen, they present remarkable variations in number, in some instances being scanty and difficult to find, in others so abundant that each field of the microscope contains several examples. On the structural peculiarities and development of these cells he does not here dwell further than to say that each one may contain from one to ten or twelve red corpuscles, which may have a perfectly natural appearance, or be in every stage of transformation into brown pigment grains. He has notes of the occurrence of these cells in the following localities:—

¹ Berliner Klin. Wochenschrift, 1877.

1. In the connective tissue cell of the embryo and new-born animal. Here, in all probability, the red corpuscles are in process of development (Schäfer).

2. In red marrow, of which they form a normal constituent, but, like the myeloid plaques, occur in very variable numbers.

3. In the spleen pulp, normal element (Kölliker), they are particularly abundant when the organ is rich in pulp, as in the acute swelling of fever.

4. In lymphatic glands, when in a state of congestion and tumefaction; not a constant feature, but sometimes very numerous.

5. In brown induration of the lungs; part, at any rate, of the pigment in this condition results from the ingestion of red corpuscles (which leave the engorged vessels by diapedesis or extravasation) by the cells of the alveolar stroma, in which they gradually undergo transformation into brownish-red grains.

6. In the neighbourhood of extravasated blood the connective tissue cells, fixed and amoeboid, are often found to contain red blood-corpuscles, which can be traced in all stages of degeneration into pigment granules.

Artificially, he has seen these cells produced by feeding lively white blood-corpuscles of the newt or frog with human red blood-corpuscles; he has a sketch of a colourless blood-cell of the newt distended with four red corpuscles which it had eaten.—*Lancet*, Feb. 4, 1882.

Prophylactic Inoculation of Rabies.

The medical profession may reasonably watch with the most profound interest the attempts now being made to ascertain whether the remarkable discoveries of Pasteur and others, regarding the prevention of acute specific diseases by vaccination with the modified virus, are in any way applicable to rabies. In spite of the attention which has been devoted to it, the subject of the treatment of this terrible disease remains the darkest chapter in the records of therapeutics, and in no other direction than prophylaxis is there at present to be discerned a glimmer of light. M. Galtier has lately stated that the injection of saliva from a rabid dog into the veins of sheep not only does not communicate the disease in its ordinary form, but appears even to confer immunity, so that the disease cannot be afterwards communicated to the sheep in any other way. The same result was obtained in the case of eight sheep thus treated. The experiments are not yet sufficient to justify any definite conclusion even as regards sheep, and no results have as yet been obtained as regards dogs.

In this connection, however, some experiments by Lussana are of interest. They were made a year ago, and have attracted little notice, but their possible significance has recently been pointed out by M. Gibier. Blood from a patient suffering from hydrophobia was injected into the veins of dogs. The patient was a medical man, practising in the suburbs of Padua, who had been bitten three months previously by a rabid dog. Observing in himself what he believed to be symptoms of the disease, he came one day to the hospital and asked to be admitted, as he wished to spare his family the terrible spectacle of his sufferings. He died a few days later, with characteristic symptoms. Before his death five grammes of blood were obtained by means of leeches, and diluted with twenty grammes of distilled water; another five grammes were obtained from the leech later by means of cupping-glasses, and similarly diluted. These were filtered, and in the filtrate no solid element, corpuscle, or bacteria could be discovered by the microscope. On January 9th the two solutions were injected into the femoral veins of two dogs. They presented no symptoms until February 1st, when they appeared dull and quiet. On February 3d one of them remained in his bed, and the following morning, twenty-four days after the injection, was found dead. A

post-mortem examination showed only gastro-intestinal congestion and fragments of straw in the stomach and large intestines, and in the latter also a quantity of black blood. A gramme of saliva was taken from the dead dog and inserted in a wound made in a third dog. This presented no abnormal symptom up to the 6th of July, when it was killed. The second dog, into which the filtered blood had been injected, remained dull and shunned other dogs, but showed no other symptoms until the month of June, when it uttered plaintive cries, both day and night. It continued to eat and drink a little, but had obvious hallucinations, turning its head right and left without motive, and often biting the air, barking roughly, and manifesting pugnacity on the approach of another dog. These symptoms continued for some weeks; it bit its own foot, ear, and lips. On July 6th. in consequence of the closing of the laboratory, the dog was killed. The autopsy showed nothing remarkable. M. Lussana was inclined to regard the case as modified rabies. The conclusion is open to some doubt, but if correct it would appear that the saliva of the first dog was incapable of communicating the disease. The experiments are suggestive only, and those of Galtier are at present scarcely more; but, taken together, they certainly deserve notice.—*Lancet*, Dec. 10, 1881.

Treatment of Epilepsy.

PROF. BALL has been investigating the point as to whether the simultaneous action of several drugs is not more efficacious in the treatment of epilepsy than when administered separately, and his results obtained are sufficiently encouraging to deserve attention. The alkaline bromides, particularly those of ammonium and sodium, with belladonna and oxide of zinc, form the basis of the treatment. He administers these bromides, of each 10 parts in 300 of water, commencing with teaspoonful doses four times a day, and increasing up to eight or ten doses daily, if the treatment is not followed by improvement within a few days. The belladonna and oxide of zinc are given in pill form, 15 grains of each being made up into forty pills, and of these, two are taken daily, one in the morning, one in the evening; four pills can be given daily in rebellious cases without causing any inconvenience. In congestive cases he employs drastic cathartics, bleeding, or leeches on the temples or behind the ears.

By this treatment he claims to have produced immediate good results, often seen on the second day of treatment. The treatment must not be suddenly discontinued, but the doses should be gradually reduced. For many reasons he prefers this double salt to the other bromides; it does not produce the headache or torpor generally following the prolonged use of the bromide of potassium, and even where a cure is not produced, the double bromide always diminishes the frequency and intensity of the attacks even in cases where the bromide of potassium has failed. The eruption following the use of the potassium salt is rarely seen when the double bromides are used.—*Journ. de Méd. de Paris*, Jan. 21, 1882.

Salicylic Acid in Rheumatism.

Regarding the question as to whether salicylic acid is a specific for rheumatism, DR. LATHAM develops the following theory as to the pathology of rheumatism:—

1. A nervous centre exists, which controls the nutrition of the muscular and other tissues, and which has been termed the "inhibitory chemical centre."

2. The action of cold, on some individuals, by lowering the power of this centre, modifies the nutrition of the tissues, and leads to the excessive formation of lactic acid and other products.

3 The presence of lactic acid in abnormal amount in the blood produces functional change in the medulla oblongata and the spinal cord (? posterior columns) when brought into contact with them, and develops the local symptoms of acute rheumatism in a manner similar to the production of the symptoms of locomotor ataxy, with its arthropathies, by organic change.

4. If the portion of the medulla oblongata in the neighbourhood of the origin of the vagus is a point of minimum energy, either hereditary or acquired, then, according to the particular fibres involved, cardiac, pulmonary, or pleuritic complications may be developed during an attack of rheumatism.

5. Salicylic acid combines with the antecedents of lactic acid, and so prevents its formation.

6. If the administration of the remedy be suspended after the symptoms are relieved, and before the "inhibitory chemical centre" has recovered its tone, a relapse will certainly take place.

Such a theory explains the necessity for giving at the commencement, at least, of the treatment, as much of the remedy as the system will bear.—*British Med. Journ.*, Jan. 14, 1882.

Salicylate of Soda in Rheumatism.

From a study of the results following the use of salicylate of soda in acute and subacute rheumatism, DR. SYDNEY COUPLAND concludes:—

1. That in the majority of cases salicylate of soda speedily reduces the pyrexia and articular pain of acute rheumatism.

2. That unless the administration be long continued, relapses both of pyrexia and of joint affection are liable to occur.

3. That such relapses are not *wholly* prevented from arising during the administration of the drug, and that in some cases they are distinctly due to the lack of proper precaution in matters of diet and rest, owing to the freedom from acute symptoms enjoyed by the patient.

4. That the best method of its administration is in regulated doses, gradually diminished both as to amount and frequency.

5. That no definite influence upon the cardiac or other complications can be observed (although in this series the number of cases of pericarditis was smaller than the average), and that, indeed, both pericarditis and endocarditis may develop whilst the patient is under its influence.

6. That the toxic effects described are serious in proportion to the largeness of the dose, and, perhaps, to the state of impurity of the drug, but that a few seem very tolerant of it (*e. g.*, No. 84). Its alleged depressing action on the heart has to be proved by experiment, and may be due to the soda.

7. Salicylate of soda is certainly *anti-pyretic*, and, to a considerable degree, *anti-rheumatic*. That its employment does not appreciably diminish the time necessary to keep the patient at rest more than under other methods of treatment, but that the immense relief given by its use in the abatement of pain and fever—a relief not to be estimated by statistics—renders it by far the most valuable remedy for the disease at present known.—*Lancet*, Jan. 14, 1882.

Pilocarpin in Scarlet Fever and Diphtheria.

Professor DEMME, in a long contribution (*Jahrb. für Kinder.*, vol. xvi.), continues the record of his observations on pilocarpin in scarlet fever and diphtheria, commenced in 1877. The conclusions at which he arrives are as follows: 1. The variable results in the observed action of muriate of pilocarpin are due to the pres-

ence with it of a second alkaloid, jaborin, resembling, according to Harnack and Meyer, atropia in its physiological action, as the pilocarpin is more like nicotine.

2. When a rapid effect is wanted, it is best administered hypodermically in doses of $\frac{1}{64}$ th to $\frac{1}{4}$ th of a grain under a year old, and $\frac{1}{2}$ th of a grain up to ten years. When given internally, the dose should be two or three times larger, with gum acacia to prevent diarrhoea. These quantities may be increased and repeated if a continuous effect be desired.

3. To prevent the vomiting and collapse which occasionally follow the subcutaneous injection, cognac, wine, strong tea or coffee, or ether, hypodermically, may be previously given. Similar stimulants are recommended when the drug is given by the mouth. The cardiac depression, which may amount to general collapse, with temporary loss of consciousness, and Cheyne-Stokes's respiration, which are liable to follow too large or too frequent doses, require stimulants.

4. Different individuals, and the same individual at different times, vary in their susceptibility to the action of the drug; and a vicarious relation between diaphoretic and sialagogue action is occasionally observed.

5. As a part of the general activity of the secretions, a marked expectorant effect, and in some cases an abundant flow from the nasal, laryngeal, and tracheal mucous membranes, occurs. Another less constant effect at the height or end of the diaphoresis is increased urinary secretion, due to the increased blood-pressure, the rapidity of flow in the glomeruli, and, perhaps, also to an effect of the drug on the renal vaso-motor nerves, or even on the floor of the fourth ventricle.

6. The superficial erythema, perceptible at the beginning of the sweating, is due to irritation of the peripheral vessels.

7. In cases of scarlet fever, where the rash is delayed or incomplete, and where, at the same time, there are severe cerebral symptoms, an energetic diaphoresis by injection of pilocarpin most rapidly removes the scarlatinal poison from the blood, and brings out the eruption, thus relieving the cerebral symptoms.

8. Pilocarpin cannot prevent scarlatinal nephritis, but it is the most effectual remedy against dropsy; and, in cases treated by it, the kidney-affection appears to run a more favourable course.

9. Nor can it prevent an attack of uræmia, occurring from extensive glomerular and interstitial nephritis; but in less severe cases its diaphoretic and diuretic action can avert uræmic attacks threatening life, and can relieve them more quickly than any other remedy hitherto employed.

10. Owing to its expectorant action, it facilitates recovery from catarrhal laryngitis, from infectious and non-infectious croup, from catarrhal pneumonia; and by the relief of symptoms of laryngo- and tracheo-stenosis which immediately threaten life. Similarly, a quicker loosening of the membrane and fibrinous infiltrations of true and also of scarlatinal diphtheria follow the administration of pilocarpin, though they do not appear to exert any action upon the specific contagium of the disease.

—*London Medical Record*, December, 1881.

During the past twelve months extensive trial has been made, on the Continent more than in England, of pilocarpine in the treatment of diphtheria. The use of such a depressing agent in a disease in which there is a marked tendency to asthenia may seem hazardous, but the agent has been given for its local influence, to aid, by augmenting the buccal secretions, in the separation and detachment of the false membranes. The method originated with Dr. Guttman, of Cronstadt in Silesia, who, in October, 1880, published the results obtained by this method in eighty-one cases. Of this number, fifteen were, in his opinion, so severe that they would probably have died under any other method of treatment, and thirty others were of moderate severity. All the cases recovered. The abundant and continued salivation established by the pilocarpine detached the membranes, removed the infiltration of the tissues, and in most of the cases the pharynx recovered its normal aspect in from one to three days,

a little longer time being required in a few cases of greater severity, but in only two cases did more than a week elapse before recovery.

Results so startling, in a disease so grave, naturally led to the trial of the method in all countries, and during the past year it has been extensively employed in Germany, Russia, and France. The results of the trials have been published in many instances, and those of the several observers have been collected by M. Picot, in the last number of the Swiss *Revue Médicale*. A comparison of these facts with some recorded elsewhere does not, it must be confessed, afford much support to the alleged value of the method of treatment. The total number of the cases in which it has been tried is 129, and of these no less than 47 have died, showing a mortality of about 36.5 per cent., or more than one in three. At the same time, the impression conveyed by massed statistics is apt to be misleading on such a subject. It is clear that in a considerable number of the fatal cases the treatment was commenced too late for life to be saved by any means. Some of the patients, for instance, were already in a state of collapse, in which the fatal end would be rather hastened by the general, than hindered by the local, action of pilocarpine. In other cases the treatment was commenced after tracheotomy had been performed, and under such circumstances it can hardly be said to have had a fair trial.

The results obtained by different observers varied in some instances so much that they can only be accounted for by assuming a difference in epidemic severity. Lax, for instance, treated ten children: the condition of six was grave, and that of two was desperate, but all the cases recovered, the false membrane coming away freely in the abundant mucus and saliva. On the other hand, Alfoeri tried pilocarpine in six cases, all of which proved fatal. Several of those who have employed the method arrived at the conclusion that it is more serviceable in adults than in children, and in pharyngeal than in primary laryngeal diphtheria. Of the cases treated by Neumeister, for example, all the adults (four in number) recovered rapidly, but one-half of the children died. He concludes that it ought not to be employed in the case of children. Of the cases treated by Delio, all those (fourteen in number) in which the diphtheria was limited to the pharynx recovered, although several of them were most severe, while of ten cases of primary laryngeal diphtheria one-half died; but it is right to add that the treatment was commenced in most of them too late to afford it a fair chance. Moreover, in the case of a child aged eleven, recorded by Lereboullet, it can hardly be doubted that pilocarpine obviated the necessity for tracheotomy. Attacks of urgent dyspnoea had occurred, and asphyxia appeared imminent. Two injections each of five milligrammes of pilocarpine had been given, and six hours after the second an abundant salivation took place, and a quantity of false membrane was expelled. The child slept calmly afterwards, and, the treatment being continued for a few days, the symptoms rapidly disappeared.

It may reasonably be asked whether an agent so powerful as pilocarpine is not likely to be injurious if it fails to do good? On this point also diverse opinions have been expressed. Guttmann could trace no prejudicial influence in any case in which he tried it; nor could Kuster. But Archambault, who lost every severe case thus treated, observed the sweating to be followed by extreme nervous depression; Alfoeri attributed to it a pulmonary œdema, which proved fatal to one of his patients; Weise lost three cases from collapse soon after commencing the treatment; and Neumeister attributed to it extreme feebleness or sudden irregularity of the pulse, which he observed in six cases. These opinions are not reassuring, although the symptoms observed may in some cases have been due to the disease, and not to the remedy.

The drug has been administered by the mouth, skin, and rectum. The former

method was the one employed by Guttman, the average dose of pilocarpine being one-fiftieth of a grain for a child and one-twentieth for an adult, given, with a little pepsine, in water acidulated with hydrochloric acid, and every dose was followed by a small quantity of Hungarian wine. He urges most strongly the importance of regular administration, the interruption of the treatment by sleep being always succeeded by an increase in the local symptoms. He attributes to the wine the prevention of any injurious effects from the depressing influence of the pilocarpine. Some of those who have employed this agent have not followed Guttman's method rigorously, the doses given by Archambault, for instance, having been considerably larger. By some, hypodermic injections have been employed, and with success; while Lepidi-Chioti produced salivation in ten or fifteen minutes by enemata containing half a grain of pilocarpine.

The conclusion from this survey of the facts is certainly disappointing to the expectations raised by Guttman's original results, which become the more remarkable, and even mysterious. But the facts at present ascertained are insufficient to decide the influence of pilocarpine in diphtheria, and further observations are necessary in cases in which the agent is employed sufficiently early to afford it a fair scope.—*Lancet*, Dec. 3, 1881.

Risks of Intra-Pleural Injections.

A few years ago we heard far more frequently of fatal accidents occurring during the operation of washing out an empyema than we have of late; but we are reminded of these risks in a note from Prof. Billroth's clinic in the *Allgemeine Wiener Med. Zeitung* for December 20th. The writer says that Professor Billroth has become convinced of the inutility of injections for the purpose of washing out the empyemic cavity, except in the case of blood-clots and decomposing secretion; and in the latter case it suffices to perform a single but thorough injection. Thus in one case of a shot-wound in the left thorax, leading to putrid empyema, Professor Billroth made a counter-opening, and for four days allowed thymol to flow through. In ordinary empyema the chances are favourable when the operation is done at the right time, for the longer pus remains in the thorax the longer the lung keeps atelectatic, and thus does not approach the wall of the thorax. A rib is resected, a drainage-tube introduced, and pus allowed free escape—a method of treatment much like that practised by Hippocrates, who bored through the rib and introduced a short smooth metal tube into the opening. To diminish pus formation a rod of iodoform can be placed in the pus cavity. Injections of cold disinfecting fluids often lead to ill consequences. Professor Billroth relates one—a female, twenty years old, with empyema, who was treated by means of injections. One day, when a cure was nearly accomplished, she became unconscious during the injection, and could not be restored. Dr. Wüller also had an older patient who became unconscious during the injection, but who recovered. Billroth explains these remarkable phenomena, that a shock is received by the organism, excited through the peripheral nerves by means of cold water, and under ever so slight conditions, it may be the cause of death; just as a mere blow on the testicle or stomach region can be fatal. Therefore it is important to employ injections, when they appear necessary, of warm fluid.—*Lancet*, January 7, 1882.

Operative Interference in Pulmonary Affections.

Dr. EDWARD BULL, of Christiania, has been carrying on the surgical line of treatment of pulmonary cavities indicated by Pepper, Mosler, Fenger, and Hol-

lister, and he believes that when a sufficient supply of material is collected to show in what class of cases operative interference is indicated, a new field of successful surgical operations in internal diseases will be opened. He contributes reports of two cases treated in the Christiania Hospital in support of his views. The first case was one of circumscribed pulmonary gangrene in a female 23 years old, with a well-defined superficial gangrenous cavity in the upper lobe of the left lung. The general condition of the patient being very poor, incision was the only treatment which appeared to give any prospects of cure; the cavity was accordingly opened from without and two or three spoonfuls of fetid pus escaped; it was then washed out with a weak solution of carbolic acid and drainage established. At the end of three days expectoration had become scanty and without fetor, the local and general conditions rapidly improved, and the patient was discharged cured about six weeks after her admission into the hospital. The second case was that of a single woman aged 54, of feeble constitution, with a pulmonary abscess resulting from a pleuro-pneumonia in the upper lobe of the left lung, in whom death resulted by suffocation from the sudden rupture of the abscess. Dr. Bull thinks that in this case operative interference would have offered a reasonable prospect of cure with no worse result than possibly a permanent pulmonary fistula, the difficulty of diagnosis and of deciding to undertake a novel operation having delayed active interference until it was too late.

Dr. Bull believes that limited gangrenous cavities and pulmonary abscesses are perfectly curable by incision if the other general and local conditions are favourable. As regards the opening phthisical or bronchiectatic cavities he does not speak in such decided terms, although isolated superficial cavities may be opened with no worse result than a permanent fistula. He does not believe that vigorous antiseptic precautions are necessary during the operation.—*Nordiskt Medicinskt Arkiv*, Band xiii. Nov. 15, 1881.

Segmental Cardiac Disturbance.

An interesting question in cardiac pathology is the occurrence of functional disturbance limited to one of the chambers of the heart. In order to ascertain what evidence experiment can supply regarding the truth of certain opinions on this subject, held by Professor Botkin, of St. Petersburg, one of his assistants, Dr. LUKJANOW, has carried out a series of investigations in the laboratories of Botkin and of Goltz. The experiments were made on rabbits and dogs. The functional connection which normally unites all parts of the heart was interrupted by closure of one of the coronary arteries, by arrest of respiration, and by other measures. He has thus obtained very distinct evidence of the possibility of such isolated functional disturbance, which seems to prove that, just as functional disturbance from organic or neurotic causes may affect the right or the left side of the heart, so it may affect the upper or the lower half. Moreover, as some disturbing influences affect one-half of the heart, vertical or transverse, so others may affect the action of certain parts only, one auricle or one ventricle. The closure of one coronary artery is found to influence, first, the ventricle on the same side, then the other ventricle, and lastly the auricles. The disturbance consists in an alteration in the number and character of the cardiac contractions. The only difference observable between the effects of simple closure and of ligature of the arteries is that the latter acts more rapidly. The alterations in the number and in the character of the contractions do not always correspond. Asynchronism is produced in the auricles much more readily than in the ventricles. A difference between the number of the contractions in the auricles and ventricles is easily produced, and almost as easily a difference between the two auricles. The cessa-

tion of the regular action of the cardiac muscle may be followed by an irregular oscillatory contraction of its individual fibres, and between these two conditions an interesting intermediate form may be observed; distinct peristaltic waves course through the heart at regular intervals. In rare cases they may be observed to have a different direction in the different segments of the heart, and the direction may change. Thus the cardiac muscle may contract in peristalsis and in antiperistalsis. At the period after occlusion of the coronary arteries at which regular contractions still occur in the ventricles, although the ventricles are the seat only of the peristaltic waves, irritation of the peripheral portion of the vagus still influences the auricles, but has no effect on the ventricles. The secondary contractions in the legs of a frog galvanoscope, which are produced by the auricles of the heart in the normal condition, are distinctly weakened after closure of the coronary arteries. At a certain period after closure of the vessels the left auricle presents intense mechanical distension. The closure of the left coronary artery in atropinized animals shows that the inhibitory centres do not play any considerable part in the production of the phenomena. General asphyxia, of sudden onset, influences especially sometimes one, sometimes the other half of the heart, and the resulting disturbance differs somewhat from that observed after closure of the coronary arteries. The effect on the secondary contraction in the frog's legs is much less rapidly produced, and there is less tendency to the occurrence of peristaltic waves of contraction. It seems probable that the effects of arterial occlusion are to be referred to two chief influences; the effect of the sudden isæmia on the muscular fibres and nervous ganglia, and the persistence in the tissue of the products of such action as may occur.—*Lancet*, December 24, 1881.

Perforation of Gastric Ulcer into the Left Ventricle.

In the *Wiener Med. Blätter*, No. 52, OSEN published the account of a case of a woman aged 71 years, in which the autopsy revealed a round ulcer of the stomach which had opened into the left ventricle. The communication was established between the two organs by a long narrow canal; no air was found in the heart or arteries. The perforation had occurred three days before the death of the woman, and was indicated by the vomiting of bright arterial blood and tarry stools. Brenner (*Wiener Med. Woch.* 47, 1881) has just published an analogous case. A woman, aged 55 years, had been subject for years to attacks of cardiac pain, occasionally accompanied by vomiting. Six months before death she had an attack of pleurisy with violent pains radiating to the epigastrium. A few days before death she vomited blood, had severe cardiac distress, and passed black, tarry stools.

The autopsy revealed a circular perforation on the lesser curvature of the stomach, which communicated with an opening in the wall of the left ventricle. As far as we know, these are the only two such cases on record.—*Gazette Médicale de Paris*, Dec. 3, 1881.

Cardiac Hypertrophy as a Renal Disease.

The problem of the subordination of cardiac hypertrophy to renal disease, when the two coexist, to which so much discussion has been lately devoted, has engaged the attention of M. STRAUS of Paris, who has published in the *Gazette Médicale* a preliminary account of his experimental results. The difficulties of the problem of the relation of the heart to the kidney lesion depend upon the complexity of the morbid conditions present in the system. These are much simplified in an experimental inquiry, although the results thus obtained have not always been

very decisive. It is difficult to preserve for long the life of animals after a lesion of both kidneys, and Straus has therefore contented himself with causing atrophy of one kidney by ligature of the ureter. Previous experiments of the same kind have yielded contradictory results. Simon, Rosenstein, and Gadden observed no cardiac consequence; Beckmann, Grawitz and Israel, and Lewinsky found a resulting hypertrophy of the left ventricle. The experiments of Straus were made on twenty guinea-pigs, which were killed from four to six months after the operation. A pure hypertrophy of the left ventricle was found to be the invariable result. The average weight of the heart, for instance, in three cases was 2.76 grammes, while that of three healthy animals was only 2.25 grammes, and this although the average weight of the guinea-pigs operated upon was two hundred grammes less than that of those selected for comparison. The hypertrophy was uncomplicated by any degeneration of the muscular substance of the heart, and was apparently the direct result of the atrophy of the kidney, since the arterioles in various parts were examined and found to be healthy.

Grawitz and Israel asserted that, although cardiac hypertrophy might follow a renal lesion in old animals in which the other kidney did not sufficiently overgrow to compensate for the loss, this result was not to be obtained in young animals. This statement is disposed of by the experiments of Straus, since nearly all the guinea-pigs he experimented upon were young. Moreover, he was unable to observe any inverse relation between the degree of hypertrophy in the heart and kidney, such as should obtain if the conclusions of Grawitz and Israel were correct. In one of the cases in which the increase in weight of the heart was greatest, the remaining kidney had increased to at least double the normal weight. An objection which is often urged against the dependence of cardiac hypertrophy on renal disease is the absence of such hypertrophy in cases in which the kidney suffers in consequence of an affection of the urinary passages. But Straus relates, to show that hypertrophy may be found in these forms, two cases of women dying from uterine cancer which had compressed the ureters, and had caused dilatation of the pelves of the kidneys and very marked renal lesions. In each there was considerable hypertrophy of the heart without any valvular lesion. In a discussion on this paper at the Société de Biologie an interesting and apposite case was related by Quinquaud. A man of twenty-eight years of age was shot in the left lumbar region, and recovered after an illness attended with hæmaturia. At this time there was no hypertrophy of the heart, but distinct evidence of this was discovered two years afterwards. He died with symptoms of uræmia four years later. The left kidney contained an old abscess, the right was hypertrophied, and the heart was increased in weight to eighteen ounces in consequence of hypertrophy of the left ventricle. All the liquids of the body were found to contain a large excess of urea.—*Lancet*, Dec. 10, 1881.

Embolism of the Aorta with Experiments on the Production of Cardiac Murmurs.

MM. BARRIE and DU CASTEL (*Archiv. Gén. de Méd.*, Jan. 1881) narrate the case of a laundress, aged 30, who was confined, for the third time, four months and a half before admission to hospital, when she was in a febrile condition. A few days after she had a severe rigor, with great pain in the loins, and tingling in the limbs, followed by paraplegia. There was total absence of pulsation in both limbs. Not a trace of murmur was to be heard over the heart; but in spite of this the diagnosis was ulcerative endocarditis of puerperal origin, with embolism of the abdominal aorta, and consecutive paraplegia. A bed-sore over the sacrum and incontinence of urine and feces followed, the urine being bloody and allu-

minous. Up to the time of death consciousness was retained, and the cardiac sounds maintained their purity. At the necropsy, ulcerative endocarditis of the left side was found, along with a large clot attached to the wall of the auricle, and prolonged into the ventricle, where it was adherent to the chordæ tendineæ. The auriculo-ventricular valve was perforated; the aortic competent, but inflamed. At the bifurcation of the aorta there was a large fibrinous clot, not adherent to the vessel. The spinal meninges and the cord itself were much congested in the lumbar region, the kidneys were studded with infarcts, the spleen congested, and its main artery obliterated: there were no signs of embolism in the brain, the lungs, or the liver. The authors cite several cases of aortic embolism and thrombosis, and point out that the former is more frequently met with than the latter. To explain why there was no murmur in their case, when the clot would be expected to produce one, MM. Baric and Du Castel, under the supervision of M. Potain, arranged a series of tubes of the same calibre, through which currents of water (at the same pressure) flowed. In these tubes were placed diaphragms of the same metal, perforated by apertures of different shape and position. They found that the intensity of the murmur was the same in all, whatever the form and situation of the orifice might be. Then to make out whether the material of which the obstacles were composed had any influence, they removed the diaphragms, and substituted foreign bodies of different nature and resistance. The murmur was loud and distinct when the obstacle was hard and resistant; but when it was soft and velvety the murmur almost disappeared. They therefore conclude: 1. That the form of the orifice has no influence over the production of the murmur; 2. That the consistence of the walls of the orifice exerts a notable influence upon the intensity of the murmur.—*London Med. Record*, Dec. 1881.

— *Œsophageal Ulcer from Digestion.*

Professor QUINCKE, of Kiel, published some time since observations to show that ulcers may occur in the œsophagus from the action of the gastric juice. Three cases are now (*Deut. Archiv für Klin. Med.*) published in support of this. 1. The first case was that of a patient suffering from cancer of both ovaries. The ulcer was in the lower part of the œsophagus; and in this, as in the other cases, the absence of cancer at the spot was proved by microscopic examination, as was also the possibility of corrosion *ante mortem* or digestion *post mortem*. 2. The second was that of a patient affected with ovarian cyst, in whom an œsophageal ulcer in the lower half had perforated into the right pleural cavity. 3. The third case was that of a man, 50 years of age, cachectic, and to all appearance suffering from cancer. The *post-mortem* examination, however, showed the cause to be marked narrowing of the œsophageal opening of the stomach by a cicatricial stricture, evidently the remains of a previous ulcer involving the neighbouring mucous membrane, and giving rise to muscular hypertrophy of the œsophagus and chronic swelling of its mucous membrane.—*London Med. Record*, December 15, 1881.

— *Encysted Dropsy of the Peritoneum.*

At the meeting of the Harveian Society of London, on Jan. 5, Mr. KNOWSLEY THORNTON read a paper on this subject. The disease is very rare, but he had met with two cases in his hospital practice in the last three months, and this showed that we must be prepared to diagnose it from other abdominal enlargements. Correct diagnosis being all important in these cases for successful treat-

ment, he alluded to the small amount of information on the subject to be found in either the general or special text-books. He quoted at some length a case in Mr. Spence Wells's work on Diseases of the Ovaries, which very closely resembled one of his own, and alluded to the opinions of Drs. West and Peaslee. The statements of the latter he regarded as misleading, the errors arising, in his opinion, from an attempt to generalize from imperfect data. He pointed out that it is important to distinguish this disease from the much commoner condition in which partial collections of fluid occur in the peritoneum around malignant growths. His own cases were then fully recorded.

Case 1 was that of a woman of forty-five, supposed to have an ovarian tumour, which was also supposed to have ruptured into the peritoneum while she was under the author's observation. Suppression of urine led to tapping of the peritoneum, which gave temporary relief, but she died with uræmic symptoms without further operation. The post-mortem revealed very advanced granular disease of the kidneys, a large spleen, and an encysted dropsy which had become general by breaking down adhesions. The ovaries were healthy.

Case 2 was that of a young girl in whose abdomen a doubtful collection of fluid existed. It was a very difficult case for diagnosis, but, on the whole, the author leaned to the view that it was a case of flaccid broad ligament cyst. Abdominal section showed that it was an encysted dropsy of the peritoneum. The fluid was removed, the sac carefully sponged out, and the incision closed without drainage. The patient made a good recovery, the intestines gradually re-occupying the place where the fluid had been, and when she was last seen there was no appearance of re-accumulation.

Mr. Thornton urged the importance of the record of rare cases, and pointed out that the knowledge of this disease was still too limited for it to be possible to lay down rules as to diagnosis. He would accept Peaslee's statement that encysted dropsy of the peritoneum is always preceded and caused by peritonitis. The causes of the peritonitis are, however, very various. With regard to treatment, he thought it right to open the abdomen, and sponge out the sac, in any case in which the condition was diagnosed in a patient free from kidney disease; drainage was not necessary. He urged the advantage of incision as compared with tapping, and spoke strongly as to the value of Listerism in abdominal section, emphasizing his faith by his results in ovariectomy at the Samaritan Hospital in 1881. During that year he had had forty-one cases, had not once drained, and had only two deaths, both occurring in young patients, the subjects of malignant tumour.—*Lancet*, Jan. 21, 1882.

Malaria and Diabetes.

At the meeting of the *Académie de Médecine* on November 29th, M. VERNEUIL communicated six observations that he had made within the year, relative to surgical affections in persons affected simultaneously with glycosuria and malaria, and he presented an extended historical review of the authors who had previously noted this association of diseases. He cited in particular the memoir of Dr. Burdel, presented to the *Académie des Sciences* in 1859, of which the following were the conclusions: 1. There exists a true diabetes in malaria. 2. This diabetes is only ephemeral, that is to say, it appears with the fever, lasts during its stay, and disappears with it. 3. The glycosuria of malarial fever reveals the disturbance which destroys the equilibrium between the cerebro-spinal and sympathetic nervous systems. 4. This explanation, given by Claude Bernard, is confirmed by the clinical facts. 5. The more violent the cases, and intense the fever, the greater the quantity of sugar in the urine. 6. When, on the contrary,

the attacks become more numerous and less severe, or, in other words, when the malarial cachexia is established, then the amount of sugar excreted becomes less.

In his notes, M. Burdel announced that he found sugar in the urine in considerable quantity in eighty instances among eighty-six cases of malarial fever; in thirty cases where the fever had become remittent, the sugar was in less quantity, and that in pregnant or nursing women, the sugar is present in large amounts.

M. Verneuil reports the notes of six cases, which lead him to formulate the following conclusions:—

1. Malaria frequently causes glycosuria.
2. This may occur in two forms: the one cotemporary with the febrile attack, and, like it, transient; the other occurring after and independent of the febrile attack, and, unlike the first, of which it is a consequence, is permanent.
3. Permanent glycosuria is especially apt to occur in malarial subjects of arthritic diathesis.

4. Malarial glycosuria appears to be one of the benign forms of diabetes.

5. Intermittent affections occurring in such subjects may take on certain characters of malaria or diabetes, or of both affections at the same time. Traumatic lesions may irritate or aggravate both diatheses, especially that of telluric origin.

— *Gaz. Méd. de Paris*, Dec. 3, 1881.

The above subject caused an interesting discussion, M. COLLIN particularly objecting to M. Verneuil's deductions. In the *Journal de Médecine de Paris*, Dec. 17, 1881, the question is subjected to a critical review, of which the following are the conclusions:—

1. The pathogenic influence of malaria can be admitted in a certain number of cases, even though mere coincidence might also be urged; it is probable, however, that this causative influence is not often exerted.

2. In the cases where diabetes is associated with malaria, it should first be proved that some more efficacious etiological condition is not concurrent with the latter.

3. Although the present state of sciences will not permit the affirmation of the frequent occurrence of diabetes of malarial origin, the facts observed by Prof. Verneuil are of sufficient importance to cause attention to be directed anew to this interesting subject.

The Value of Alveolar Periostitis of the Jaws as a Diagnostic Sign in Diabetes.

At the meeting of the *Académie de Médecine* held on Dec. 27, 1881, M. MAGITOL read a memoir with the above title, of which the following are the conclusions:—

1. Examination of the mouth furnishes a constant diagnostic sign of the presence of diabetes.

2. This consists of a condition of the alveolar border described as alveolar osteo-periostitis.

3. This manifestation of diabetes, which appears at the onset of the disease and lasts during its course, may in certain cases serve as a revelation of the presence of the disease.

4. The alveolar lesion at the commencement of the diabetes is distinguished by a deviation of the teeth; in a further stage of the disease the teeth become loosened and alveolar catarrh is present. And in the most advanced state of diabetes the teeth drop out. If, after these stages, the disease still advances, the

alveola, deprived of the teeth, may become absorbed consecutively or not to a partial gangrene of the gum. This last sign is usually only shortly antecedent to death.—*Journ. de Méd. de Paris*, Dec. 31, 1881.

Albuminuria in Epilepsy.

An exhaustive paper by Dr. KLEUDGEN, in the *Archiv für Psych.*, Band xi., Heft 2, bids fair to set at rest the much vexed question as to whether albuminuria is a common result of an epileptic attack. The author has made many preliminary experiments to ascertain the tests for albumen, which are at once the most delicate and the least liable to any source of fallacy. Observations were made upon fifty-seven confirmed epileptics (36 males and 21 females), aged from 13 to 66 years. In women, the urine was always drawn off by catheter. It was found that the urine passed within four hours of an epileptic attack nearly always contained traces of albumen; in only about one-eighth of the cases was it entirely absent. But, pursuing his observations further, Kleudgen found, on examining the urine of these same patients as long as possible after a fit, that quite as large a proportion of the samples contained small amounts of albumen. Further, on testing the urine of a large number of insane patients of various kinds, but not epileptic, it was found that albumen was present in just about the same number of cases. Not content with this, Kleudgen next directed his attention to the urine of healthy adults. In eight cases out of thirty-two attendants upon the insane, he found a small quantity of albumen to be present in the urine.

The author's conclusions are these: There are traces of albumen in all urine which presents a certain degree of concentration (an increased specific gravity). Slight increase in the quantity of albumen may occur periodically without a corresponding rise in the specific gravity, and without the existence of renal disease. The urine secreted after an epileptic attack does not present any peculiarity, either in reaction or in specific gravity. It is very rare that an attack of epilepsy determines an augmentation of the quantity of albumen in the urine; when this occurs it is only very slight; moreover, in males it is generally due to the presence of semen in the urine. Renal casts are not found in the urine of epileptics unless kidney-disease be present.

Accepting the above results as true, it is easy to trace the origin of the contradictory statements which have been made upon this matter. Those observers who have only used the ordinary methods of testing for albumen have found none in the urine of those epileptics who were free from renal disease. Others, who have made use of more delicate tests, have found small quantities of albumen almost constantly present; but they have failed to note that this is also the case in the same patients while temporarily free from convulsive attacks, also in insane patients of all kinds, and in a large proportion of healthy adults of both sexes. We may add that a number of the most careful and exact observers have been ranged upon both sides in the controversy which has been so long continued upon this subject.—*London Med. Record*, December 15, 1881.

Hæmoglobinuria Produced by Naphtol.

Dr. ALBERT NEUSER (*Central. f. d. Med. Wiss.* No. 30) has found that when naphtol is given in large doses to dogs and rabbits it produces hæmoglobinuria. One gramme, injected in a concentrated warm solution under the skin of a rabbit of 1000 grammes, produced death, and a gramme and a half killed a dog weighing 4500 grammes. Death was preceded by salivation and restlessness in dogs, and by well-marked convulsions in rabbits. Dogs are killed by a smaller

proportionate dose than rabbits, just as they are by pyrogallie acid. This is important, as man resists pyrogallie acid still less than dogs. Twelve grammes of pyrogallie acid given to a man weighing 100 kilogrammes, produced solution of the blood and death. It is therefore probable that the fatal dose of naphtol for a man would be comparatively small, and all the greater care must be employed in its application, as patches of psoriasis appear to increase the absorptive power of the skin. The urine must therefore be carefully watched during the application of naphtol, and when nephritis is present still more precaution must be employed.—*Practitioner*, November, 1881.

— *Leprosy.*

In a paper on Leprosy as it exists in Louisiana, Dr. G. B. UNDERHILL concludes, as regards its etiology—

1. That the disease is clearly of a specific character, generally due to hereditary transmission. That its hereditary character is not similar to that of syphilis, but more allied to those classes of diathetic disease, such as carcinoma, tubercle, and the like.

2. Its propagation by contagion cannot be proved. Its non-contagious character is universally admitted.

3. That climate, soil, and race cannot be regarded as positive elements in its causation.

4. That filth and uncleanness increase the liability to and accelerate the progress of the disease.

5. That absence in the diet of certain principles, such as nitrogen, oxygen, and potassium, may be considered as negative causes of its production.

The following summary of its symptoms is also given:—

1. The precursory symptoms are such as would point to the approach of any serious constitutional malady.

2. That bronze discoloration and a flabby, shrunken condition of the skin is usually the first permanent symptom and generally associated with local anæsthesia on the extremities.

3. That nodulation, the result of leprous tubercular deposit, occurs at a later stage of the disease, progresses slowly, and involves all the tissues and viscera of the body, the lungs and pancreas excepted.

4. That death is the termination of the disease in all cases. It results either from exhaustion, blood-poisoning, asphyxia, diarrhœa, or dysentery. That death from exhaustion or blood-poisoning is common to both sexes in any stage of the disease after nodulation sets in. That death from asphyxia is most common among women, and occurs late in the career of the disease. That death from diarrhœa or dysentery is most common among men, occurring generally at a late date. That the progress of the disease is slow. Mild cases generally continue about twenty years. Severe cases terminate on an average after nine to twelve years.

Dr. Underhill believes that leprosy is an incurable disease from its commencement to its termination; palliative measures and measures tending to limit its propagation can only be adopted.—*New Orleans Medical and Surgical Journal*, January, 1882.

SURGERY.

Transplantation of Bone.

From studies made on this subject, Dr. MAC EWEN concludes that bone-grafts are capable of being transplanted, even in the case of man, of forming adhesions, and developing. Each graft should comprise all the osseous elements, the best process being to divide the fragments with a sharp-cutting instrument into very small pieces before applying them. In order to insure success, antiseptic treatment must be carefully carried out.—*Revue de Chirg.*, Jan. 10, 1882.

Iodoform in Wounds of the Mouth.

The efficacy of the local use of iodoform in tuberculous affections of the joints, and its efficacy in the treatment of wounds where sutures are inapplicable, have recently led Prof. BILLROTH to test its use in wounds near the natural apertures of the body, particularly since antiseptic dressings to these parts have been found unmanageable. From April to October, 1881, eighteen carcinomata of the tongue were removed in the Vienna clinic. In some of these cases the third or half of the tongue was excised, although in the majority the organ was removed in its entirety. In many of the cases it was found necessary to remove part or all of the floor of the mouth to the hyoid bone. In several cases the submaxillary gland and lymphatics, as well as parts of the soft palate and pharynx, were removed. To render these extensive operations practicable, the inferior maxilla had to be divided, and in a number of cases was partially removed. To prevent excessive hemorrhage and flooding of the field operation, the operations on the tongue were, as a rule, preceded by ligature of the lingual and facial.

In all of the eighteen cases a complete cure was effected. In none of the cases was there any local disturbance, and in only a very few was there any elevation of temperature except during the first few days.

Since the technicalities of the operation had not been altered, these fortunate results must be attributed to the treatment of the wounds with iodoform. The main points of this treatment can be summarized as follows: When, after amputation of the tongue and floor of the mouth, the latter communicates with the external wound through which the lingual artery was ligated, a large drainage tube is passed through this opening into the mouth. If the floor of the mouth was not injured by the operation, Billroth no longer perforates it for drainage purposes. After the operation a piece of iodoform-gauze, six to ten inches in length, and one to two inches in width, folded upon itself, is introduced into the wound, and pressed against the surface operated upon. This small piece of gauze suffices to completely and permanently keep the wound free from septic changes.

The piece of gauze thus introduced after the operation elings to the wounded surface for from five to eight days. It does not come out spontaneously before this length of time has elapsed, and does not interfere with the deglutition of the patient.

The iodoform gauze is prepared as follows: 60 gr. of resin are dissolved in 1200 gr. of alcohol, and 50 gr. of glycerine are added to this solution. Into this are placed six yards of gauze, from which the excess of solution is to be squeezed out. When this gauze is half dried, 50 gr. of powdered iodoform are dusted upon it.

If the results obtained in these cases of Billroth be compared with those achieved in similar cases in former times, it becomes apparent that in the iodoform we have a powerful means of preventing the septic changes that usually

carried off patients who had been subjected to capital operations about the mouth.—*Cincinnati Lancet and Clinic*, Jan. 14, 1882, from *Centralb. f. Chir.*, Dec. 3, 1881.

Excision of the Tongue.

WALTER WHITEHEAD, F.R.C.S.E., F.R.S. Edin., reports twenty-eight cases of removal of the tongue through the mouth with only one death as the immediate result of the operation in an old man aged sixty-nine. The difficulties and danger of the operation, according to the author, are few and more imaginary than real. Hemorrhage, the *bête noire* of most surgeons who contemplate removing the tongue, is in reality easily controllable, and frequently trifling. Mr. Whitehead states that he has twice removed the entire tongue without having to secure a single vessel, and more than once had only to twist one lingual artery. The operation is conducted in the following manner:—

1. The mouth is opened to the full extent with Mason's or any other suitable gag, the duty of attending to this important part of the operation being intrusted to one of the two assistants required.

2. The tongue is drawn out of the mouth by a double ligature passed through its substance an inch from the tip. This ligature is given in charge of the second assistant, with instructions to maintain throughout the operation a steady traction outwards and upwards.

3. The operator commences by dividing all the attachments of the tongue to the jaw and to the pillars of the fauces, after the manner suggested by Sir James Paget, with an ordinary pair of straight scissors.

4. The muscles attached to the base of the tongue are then cut across by a series of successive short snips of the scissors until the entire tongue is separated on the plane of the inferior border of the lower jaw, and as far back as the safety of the epiglottis will permit.

5. The lingual or any other arteries requiring torsion are twisted as divided. It is generally found that a moment's pressure with a small piece of sponge, held in sponge forceps, suffices temporarily, if not permanently, to arrest any bleeding; it is, however, regarded as desirable to twist, either immediately or after the tongue is removed, every bleeding vessel.

6. A single loop of silk is passed by a long needle through the remains of the glosso-epiglottidean fold of the mucous membrane, as a means of drawing forwards the floor of the mouth should secondary hemorrhage take place. This ligature may with safety be removed the day after the operation, and, as it is invariably a source of annoyance to the patient, it is always desirable to adopt this rule.

The after-treatment consists in feeding the patient for the first three days absolutely and solely by nutritive enemata, satisfying the thirst by occasionally washing out the mouth with a weak acid solution of permanganate of potash, forbidding any attempt at speaking, and requiring that all the wishes of the patient shall be expressed in writing, or by signs.—*Lancet*, Oct. 22, 1881.

In the *Annals for Anatomy and Surgery*, Dec. 1881, Dr. JOSEPH HOWE records two cases of entire removal of the tongue, and describes "a safety-pin tourniquet" whose use, he thinks, will render the extirpation of the tongue an exceedingly safe and simple operation.

Extirpation of Goitres.

Dr. WÖRLER contributes to the *Wien. Med. Woch.*, No. 1, 1882, some statistical details of the cases in which Professor Billroth has performed the operation of extirpating goitre. He commences his short paper with the remark that one

of the most interesting and profitable of surgical inquiries consists in casting a critical eye over the results, obtained by skilful hands, in surgical operations which but a short time ago were never thought of. Not only does the surgeon call to mind the interesting clinical points in each case, but he impresses on his memory the valuable experience which each case afforded, out of which gradual improvement in the modes of operating is derived. The author on this occasion, as already remarked, keeps strictly to statistics, reserving for a future occasion the detailed history of the cases. Thanks to antiseptic surgery, Professor Billroth has felt himself justified in resuming this operation and of developing it during the past five years. Within this period he has performed 58 operations on 55 patients (in three cases a second operation was necessitated in consequence of recurrence). Of the 55 patients, 48 were cured and 7 died. This gives a mortality of 12.7 per cent. In two of these fatal cases death resulted from causes apart from the operation; in one in consequence of bursting of an aneurism of the aorta; in another from peritonitis. Among the remaining 53 cases, there were 5 of malignant disease of the thyroid. Of these 5 cases 4 recovered from the operation, while the fifth died after tracheotomy had been performed, of asphyxia, dependent on extensive recurrence. All these cases, indeed, might be excluded, as extirpation of the thyroid, on account of malignant growths, differs both in the method of operating and in prognosis from cases of goitre. Thus, 48 patients remain, of which 44 were quite cured. Comparing the results (of the goitre cases proper) with others obtained in the pre-antiseptic period, the following facts are shown: From 1860 to 1876 there was a mortality of 36.1 per cent.; whilst during the years from 1877 to 1881 the mortality was 8.3 per cent. As regards the performance of tracheotomy in these 48 cases, in 5 only was it called for, either before, during, or after the operation. Of these 5, 3 died and 2 recovered. Thus of the 43 cases in which tracheotomy was not necessary only 1 died, which is a percentage of only 2.3 per cent. of non-tracheotomized patients. From this it may be concluded how much more severe those cases are in which at the time of the operation there is tracheal stenosis. Of the 48 cases, 15 were males, 33 were females. Among the latter the operation was undertaken in several instances on "cosmetic" grounds. The oldest patient was sixty-five, the youngest (a girl) only twelve. Age seemed to exert no unfavourable influence. Concerning the mode of operating it may be stated that in 2 cases the gland was shelled out of its capsule, 1 of which was fatal; in 24 cases only one-half of the gland was removed, with 1 fatal case; and in 22 cases the entire gland was removed, with 2 fatal cases. The average duration of the after-treatment in the favourable cases was 21.8 days. The recurrent laryngeal nerve seems to have been interfered with (as shown by laryngoscopic examination) in 11 cases on one side; in 2 cases on both sides; and in 31 not at all. Of these cases of one-sided paralysis of the cords, it must be mentioned that the patients recovered perfectly in the course of time, and that in 3 of the 11 the paralysis existed before the operation. In 1 of the 2 cases of double-sided paralysis of the cords, which died of tetanus three months after the operation, a post-mortem examination failed to show that the paralysis depended on injury of the recurrent laryngeal nerve.—*Med. Times and Gaz.*, Feb. 4, 1882.

Gastro-Enterostomy.

Under the above title we hear of a new operation from Germany, performed for the first time by Dr. Anton Wölfler, who is Professor Billroth's assistant, and afterwards by that distinguished surgeon himself. The operation (an account of which will be found in the *Centralblatt für Chirurgie* for November 12) appears

to have been devised on the spur of the moment, after an exploratory incision had been made into the abdomen of a man who was suffering from cancer of the pylorus, and in whom the operation for removal of the tumour proved to be impossible. It consisted in making an incision into the stomach near the middle of the great curvature, and a similar cut into a coil of small intestine, we presume as near as possible to the commencement of the jejunum, and carefully sewing to one another the margins of the two openings thus formed. The object of the operation is thus twofold—in the first place, to allow the materials swallowed to pass into the intestine; and in the second place, to prevent any obstruction to the escape of the biliary and pancreatic secretions. Strict antiseptic precautions, “with the exception of the use of the spray,” were observed during the operation, and not only did healing take place without any fever and by first intention, but the patient experienced very marked relief, and at the time of the report had survived the operation nearly four weeks. Not only had he survived, but a marked improvement had taken place in his symptoms: the vomiting had stopped, and he had been able to take increasing quantities, first of liquid, and afterwards of solid food. He had also had daily evacuations of the bowels, the stools being firm and brown.

Billroth's case was also one of a cancer of the pylorus too far advanced for removal. The operation was apparently carried out in the same way: it was easy of performance, and lasted only an hour. The patient, however, was seized with biliary vomiting, which continued till he died on the tenth day. An explanation of the vomiting was found post-mortem: there was no peritonitis; but the result of drawing the intestine towards the stomach had been to form a spur which divided the opening between the two viscera into two unequal parts, the larger of which communicated with the proximal portion of the intestine. The result of this was that the bile and pancreatic secretion, instead of passing into the intestine, were poured into the stomach, and the consequence was that which has been described. The author points out the necessity of making sure, to begin with, which is the proximal and which the distal portion of the coil of intestine selected, and then taking care that a thoroughly free communication shall exist between the latter and the stomach, while the former shall be, in a way, valved by making the stomach-wall overlap it. He also suggests that this method of procedure may possibly prove of value in cases of malignant growths in connection with the intestine.—*Med. Times and Gaz.*, Dec. 3, 1881.

Removal of a Cyst of the Pancreas Weighing Twenty and a Half Pounds.

Dr. N. BOZEMAN presented, at a meeting of the New York Pathological Society (*Med. Record*, Jan. 14, 1882), a specimen accompanied by the following history: it was interesting with reference to three particulars: first, as having been removed from the pancreas of a living woman; second, as having been mistaken for an ovarian cyst; and third, as being the first operation of the kind upon record.

The patient was the wife of a prominent physician of Texas, forty-one years of age, tall and robust, weighing nearly two hundred pounds, and perfectly healthy up to seven years ago, except occasional attacks of dyspepsia. Seven years ago she had, for the first time, pain in the right iliac region, extending down the right thigh and occasionally attended with numbness. Five years ago the abdomen began to enlarge, slowly at first, but gradually increased in size upon the left side, with a corresponding flatness upon the right side. The point at which the enlargement was first noticed was higher than would naturally be expected for an ovarian cyst. At that time no special importance was attached

to the enlargement of the abdomen, either by herself or husband, who frequently examined the tumour. It progressed in the ordinary way up to six or seven months ago, when it suddenly began to grow rapidly, and finally the entire abdomen was distended symmetrically. At the same time the patient began to lose flesh. The case was diagnosticated as one of ovarian cyst by Professor Richardson, of New Orleans, who advised the patient to consult Dr. Bozeman. On November 19, 1881, the patient having entered the Woman's Hospital, Dr. Bozeman examined her and diagnosticated ovarian cyst. She was also examined by his colleagues, Drs. Thomas and Emmet, both of whom confirmed his diagnosis.

An operation was decided upon, and it was performed on the second day of December, under Listerism. Nothing unusual presented itself in the early stage of the operation. When the tumour was reached through an incision below the umbilicus, its appearance was nearly that presented by an ordinary unilocular ovarian cyst, except, perhaps, it had a little deeper pearlsh colour. It was tapped and two and one-half gallons of fluid were removed. After the greater part of the fluid was drawn off, about two-thirds of the cyst was drawn through the abdominal opening, and then, for the first time, Dr. Bozeman suspected that it was not ovarian. He then passed his hand into the peritoneal cavity and found the uterus and both ovaries, and also determined that the cyst had an origin somewhere in the upper part of the abdomen. The abdominal incision was extended upward two inches above the umbilicus. The stomach was then found crowded against the diaphragm, and the bowels were deep in the abdominal cavity below the cyst. The cyst had an extensive attachment, apparently to the transverse mesocolon. After some manipulation he finally reached the pancreas, where he discovered a large vein, subsequently determined to be the splenic, which was very tortuous, and offered considerable obstruction to the operation, owing to its close relationship to the pedicle. Finally he traced the cyst down until he reached the tail of the pancreas, which was turned up on the side of the cyst, and firmly adherent to it to the extent of two inches. He then proceeded to separate the extremity of the pancreas from the cyst by dissection, and when completely separated the pancreas spread out and presented its natural appearance. The attachment of the cyst was at the junction of the outer with the inner two-thirds of the organ, and it had a pedicle three-fourths of an inch in length and about three-fourths of an inch in diameter. The veins of the pedicle were very large. Having fairly reached the pedicle, he transfixed it with a needle, ligated it in the usual way, and cut it off. The result was that he cut out the bottom of the cyst, as shown in the specimen. The portion of the cyst, however, which remained attached to the pedicle was subsequently completely removed by dissection. The artery which supplied the growth was doubtless a branch of the splenic, and it had attained a very large size—as large as the brachial. The loss of blood was small, and not a single bleeding vessel required a ligature. The fluid which the cyst contained was of a light brownish colour, its specific gravity was 1020, and it had an acid reaction, in that respect differing from the fluid removed from the ordinary ovarian cyst, which is alkaline. The girth of the patient before the operation was forty-one inches, and both oblique measurements, from the anterior superior spinous processes of the ilia to the umbilicus, were the same—nine inches. The tumour, with the fluid, weighed twenty and one-half pounds.

The specimen was also interesting in another respect, namely: with reference to the point of attachment, which was almost precisely in the position occupied by the bullet in the late case of our deceased President. The patient underwent special preparation for the operation. She took salicin, fifteen grains three times

a day for two weeks. On the morning of the day on which the operation was performed she received fifteen grains of quinine with one of opium, and when she went upon the table she was thoroughly cinchonized. The patient rallied from the anæsthetic and from the operation without any shock whatever. After the operation she took by the rectum, at intervals of six hours, ten grains of quinine with two ounces of beef-juice, half a drachm of liquor opii comp., and two drachms of brandy. On the third day the temperature reached its highest point, 101.5° F., but the pulse never rose above 98. Subsequently the pulse fell to 80, and the quantity of quinine was gradually lessened, but on the eighth day after stopping the quinine the temperature rose to 102.8° F. The quinine was again resumed, ten grains every six hours, and the temperature in the course of thirty-six hours fell to 99.5° F., and subsequently the patient had progressed in the most satisfactory manner, and there was every prospect of a complete recovery.

The Surgery of Cysts of the Pancreas.

The deep position of the pancreas, the extreme rarity of its diseases, and the difficulty attendant upon their discrimination, render any information upon its lesions and their management exceptionally valuable. Bécourt and Douponchel have described cysts of this organ as large as a child's head; but it is only within the past year that this class of tumours has attracted the attention of the operative surgeon. Kulenhampff, of Bremen, records the case of a man, thirty-nine years of age, in whom, at the end of two months, as the result of severe blows upon the belly, received in hoisting a heavy kettle, a tumour made its appearance in the epigastrium. An exploratory incision was made on the 14th of September, 1881, and a few ounces of fluid, which proved to be pancreatic on chemical examination, were withdrawn with an aspirator. Six days subsequently the abdomen was again opened, the peritoneum was united to the incision, and antiseptic gauze inserted into the belly with the view of exciting adhesion between the sac and the walls of the abdomen. The object having been accomplished in four days, the cyst was laid open, a litre of fluid evacuated, a tent inserted, and antiseptic dressings applied. During the next sixteen days fluid constantly escaped in gradually diminishing quantities, the tumour disappeared, and a fistulous track remained, which, under the application of tincture of iodine and nitrate of silver, had completely closed on the 30th of October. The operator alludes to a case in the hands of Thiersch, in which a cyst of spontaneous origin, and supposed to be connected with the tail of the pancreas, was opened and three litres of chocolate-coloured fluid evacuated. The patient recovered, but a fistule remained.

In addition to the foregoing cases, two examples of the removal of cysts of the pancreas, being the only ones of the kind on record, were reported by Rokitsky, of Vienna, and Bozeman, of New York, both of which were mistaken for ovarian tumours. The case of Rokitsky occurred in a woman, thirty-six years of age, who had suffered with signs of ovarian dropsy for nearly three years. On the 27th of February, 1881, the usual incision was made, and the cyst was found to be extensively adherent to the omentum, stomach, descending and transverse colon, the latter of which was torn to the extent of two centimetres; but the rupture was closed with five sutures. During the separation of the adhesions fifty vessels were ligated, the sac was lacerated, and the patient nearly died on the table. The greater portion of the sac was left *in situ*, and the outer wound closed. On death from suppurative peritonitis on the tenth day, the cyst was found to be connected with the tail of the pancreas.

The patient of Bozeman was forty-one years of age, and the disease was

observed five years before the operation, which was performed on the 19th of November, 1881. After the greater portion of the fluid had been drawn off, and the attachments to the transverse mesocolon had been severed, the enlarged and tortuous splenic vein came into view, as it rested upon the pedicle of the cyst, which was three-quarters of an inch long and broad, and attached to the tail of the pancreas. This was ligated, and the operation was concluded in the usual way. The tumour, with its contents, weighed twenty-one pounds and a half. Not a single vessel required a ligature. The patient was discharged cured on the thirty-eighth day.—*Medical News*, March 4, 1882.

The Operative Treatment of Floating Kidney by Fixation.

That extirpation of one kidney, and thus of one-half of the entire urine-secreting surface, can be borne by the human organism without instant danger to life, was proved by Simon in his work on the *Surgery of the Kidneys*, published in 1871. It is obvious that various renal diseases will be more dangerous in persons with only one kidney than in those with two, even if a vicarious activity has been set up and a compensatory hypertrophy established. In this opinion Moseler, Oppolzer, and Rayer concur. Of fourteen fatal unirennular cases tabulated by Rayer and Moseler, nine suffered from renal calculus, and seven of them died suddenly from obstruction of the ureter and rapid anuria. Extirpation of a kidney, then, as Simon expressly laid down, is only permissible when the patient's life is seriously threatened by, and all other less dangerous measures have failed in getting rid of, the disease. Floating kidneys have of late years been repeatedly extirpated. Recently, however, Hahn (*Centralblatt für Chir.*) has devised a method of fixing the organ by means of sutures, which, both with regard to the operation itself and the future life of the patient, seems less dangerous than extirpation. He has operated in this manner in two cases where all other means had failed. The patients had been confined to bed for weeks and months by severe and constant pain. In neither case could extirpation be thought of. As to the first, there was reason to believe that a calculus existed in one kidney, possibly in the non-movable one; and in the second case both organs were movable. Accordingly he resolved to relieve the patients by what he terms the "operative fixation of floating kidney." In both cases the right kidney was extraordinarily movable, the viscus falling across the middle line to the left whenever the patient lay on that side, and sinking deeply into the right hypochondriac region when she stood upright. The patient having been anaesthetized, a vertical incision was made along the edge of the sacro-lumbalis muscle from the twelfth rib to the crest of the ilium. The quadratus lumborum and external fibrous layer of peritoneum were then cut through, and the kidney with its adipose capsule was drawn backwards into the wound and then secured with from six to eight catgut sutures. (According to Arnold, the kidney is not a completely extra-peritoneal organ, but lies between two layers of that membrane, the posterior portion of which may thus be divided without the general peritoneal cavity being opened up.) The whole wound was then stuffed with carbolic gauze. The cases progressed favourably; the dressings were changed at intervals of five days; and at the end of four weeks the wounds were almost entirely closed, and the kidneys remained firmly attached to the points of suture. The following are short clinical histories of the two cases:—

I. Mrs. S. 38, unipara. Ren. mob. dexter produced suddenly three years ago through lifting heavy weight. Suspicion of left-sided renal calculus. Excruciating general pains, sometimes causing loss of consciousness. Operation, as above,

performed 14th April, 1881, after which date all pain disappeared, and up to the present (10 weeks since the operation) there has been no recurrence.

II. Miss W., 28, nullipara. Has suffered for two years. Both kidneys movable, the right more so than the left. Symptoms the same as in Case I. The right kidney was fixed with sutures on 10th April, 1881.

As in one case three months almost have now passed without return of pain, we may regard the patient as cured. In Case II. some discomfort remains, and we shall operate on the left kidney in the hope of obtaining the wished-for result. Though the kidneys were firmly fixed at the end of four weeks, they have now, owing to the patient's standing and walking, again become somewhat movable. This motion is upwards and downwards; the inward tendency has disappeared. The adhesions do not seem to have been strong enough to permanently resist the constant weight of the kidney; and it may therefore be advisable, in order to obtain a more secure attachment, to incise the capsula adiposa on the convex margin, and, having separated it from the posterior surface (as does Simon in extirpation of the kidney), to firmly stitch the detached part into the wound. It would be well, also, to fix the kidney at the lowest point in its area of mobility, so as to secure for it a firm basis of support, and to avoid straining the adhesions when the patient stands upright. Experience shows that kidneys fixed in abnormal positions never give trouble, even when very low down. The operation, under antiseptic rules, is devoid of danger, and, as Case I. proves, is capable of removing all the painful symptoms without increasing the danger to life in subsequent injuries or diseases of the kidney. Further, Hahn is convinced that the kidney may be more safely removed by the posterior than by the anterior operation, for during the latter the peritoneum must be cut through several times, a danger altogether avoided in the posterior operation. In this, also, the pedicle is less stretched during deligation, and so less risk of rupture and hemorrhage is incurred. Finally, he would only consider extirpation of a floating kidney indicated when the viscus itself shows signs of disease, or when, contrary to all expectation, nephrorrhaphy had failed to effect a cure.—*Edinburgh Med. Journal*, Feb. 1882.

Cases of Nephro-Lithotomy.

At the meeting of the Clinical Society of London, held January 27, reports of four cases of renal lithotomy were read. In Mr. MARCUS BECK's case, the patient was a young man, aged nineteen, who had suffered for twelve years from symptoms of renal calculus. One year before he applied at University College Hospital his symptoms had suddenly increased in severity, after a profuse attack of hæmaturia. From that time he was practically unable to earn his living on account of the severe pain invariably brought on by any movement. He suffered from considerable frequency of micturition. He only passed blood recognizable to himself on three occasions. Treatment by rest was tried for three weeks without the slightest benefit. During this time no blood was noticed in his urine, but it almost always contained a very small quantity of pus. His symptoms while in the hospital were those ordinarily observed in cases of renal calculus. Examination of the loin under chloroform showed the absence of any recognizable renal tumour. A distinct fulness, which was always clearly visible in the loin, seemed to be due to contraction of the muscles over the tender kidney, and possibly to some hypertrophy. On August 11, 1881, the operation of lithotomy was performed. The incision was slightly nearer the last rib and a little more oblique than the ordinary colotomy wound. The muscles were very thick for so feeble a subject. The kidney was exposed without difficulty in its lower half. Manipulation failed to detect the presence of a stone. The kidney was then

punctured with an ordinary darning-needle held in a pair of torsion-forceps, and the presence and situation of the stone were easily recognized. Following the direction indicated by the needle, a knife was passed into the kidney with its edge directed upwards. The bleeding, which was at first very alarming, was arrested by the pressure of a sponge in less than one minute. The wound was then dilated with a pair of polypus-forceps, with which the stone could be felt, but not grasped. The finger was, therefore, inserted by the opening into the pelvis to guide the forceps, and the stone was then easily removed. The bleeding ceased at once. A large drainage tube was inserted with its deep end in the fat about the kidney, and the wound sutured. The whole operation was performed under the carbolic spray, and the wound was closed with carbolic gauze. The stone weighed twenty-nine grains. It was heart-shaped, and had apparently been moulded to the form of a calyx. It was composed chiefly of uric acid. The after-progress of the case was uninterruptedly favourable. The shock of the operation was not great, and lasted only for a few hours. There was considerable vomiting for the first thirty-six hours. He passed no water for twelve hours, and at the end of that time twelve ounces were drawn off by a catheter, after which he passed it naturally. No urine escaped from the wound till the seventh day. It then flowed abundantly till the eleventh day, when it ceased to pass by the wound. At the end of the third week he sat up in bed; at the fourth week he left his bed; and at the end of the fifth week he went to a convalescent home with the wound soundly healed. The temperature never rose above 101.5° Fahr., and even after the eleventh day it remained below 100° Fahr. He suffered no pain after the second day. This case presented all the conditions justifying the operation. The patient was totally incapacitated from earning his living. It might be presumed that the stone was too large to pass by the water, as it had existed in the kidney for a period of twelve years.

Mr. HENRY T. BUTLIN read a paper on a case of renal lithotomy. The patient was a young man, aged twenty, who, for ten or twelve years, had suffered from severe attacks of neuralgia of the testis. The attacks occurred very frequently, and lasted from thirty minutes to two or three hours. After his admission into St. Bartholomew's Hospital, in September, Mr. Willett discovered that the pain was seated in the right side of the abdomen as well as in the testicle, and that the symptoms were those of renal colic rather than of neuralgia of the testis. The urine contained crystals of calcium oxalate, and occasionally a trace of albumen, but no blood or pus. In spite of the pain, the patient's health was fairly good. As treatment did not afford permanent relief, Mr. Butlin cut down on the kidney through a vertical incision in the lumbar region. The kidney appeared to be healthy, but a calculus was discovered and removed from the renal pelvis. It was composed of calcium oxalate, was about as large as a filbert, and quite prickly on the surface. The patient made a good recovery, so that two months after the operation—which was performed on October 5—he was discharged free from pain and quite well, except that a small quantity of pus was present in the urine. Lister's antiseptic dressing was at first employed, but this was abandoned two days after the operation, and the wound was treated, as far as possible, like an ordinary lithotomy wound. Urine ceased to flow through it after about the seventeenth day. This case is of interest, not merely as a contribution to the successful treatment of renal calculus, but as an important contribution to its diagnosis. The absence of blood in the urine is especially remarkable when the situation and nature of the stone are considered.

Dr. WHIPHAM and Mr. J. W. HAWARD contributed a paper on two cases of nephrotomy for the removal of renal calculus. *Case 1.*—A married woman, aged twenty-three, was admitted into St. George's Hospital, under Dr. Barclay, on

September 10, 1880. The family history was good. The patient gave a clear history of having passed a calculus seven years previously. It was a rough stone, and gave much pain. After this she remained in fairly good health, and although she experienced no paroxysms of pain, yet she was never free from constant uneasiness in the left side. She had never been very robust. Nine weeks before she came under Dr. Barclay's care the pain in the left loin recurred with great severity. She lost much flesh, and the urine became "very thick" and offensive. She experienced pain on micturition. While under observation she complained of shooting pains in the left loin, weakness, and loss of appetite. The abdomen was flattened, and neither dulness nor swelling was detected on the right side. On the left side the muscles were firmly contracted, and therefore no tumour was found. There was great tenderness over the left hypochondriac and lumbar regions, and slightly so in the right groin. The urine contained much pus, and was alkaline. During her residence in hospital she suffered much pain in the region of the left kidney, and had occasional perspiration. Eventually the urine became acid, and the pain was much relieved; and she was discharged, somewhat improved, on October 23, 1880. On March 21, 1881, she was readmitted under Dr. Whipple's care, when she stated that she had in the interval never been free from pain, and that for the past week it had been intense. The urine had been persistently turbid, and she had vomited on March 20. She had noticed a few clots of blood in the urine. The abdominal tenderness was so great that no satisfactory examination could be made. As no improvement took place, Mr. Haward was called in consultation, and he decided to attempt to remove the calculus by nephrotomy. The patient having been placed under the influence of ether, a tumour was distinctly felt in the left loin, and an incision was made as if for lumbar colotomy. The surface of the tumour was exposed, a bistoury thrust into it, and the finger passed into the dilated pelvis of the kidney. A firmly fixed stone was at once detected, and without much difficulty removed, together with a few small fragments. Very little blood was lost. The patient did extremely well, and on July 16 was discharged, there being still a little discharge from the sinus in the loin, and a small quantity of pus in the urine. The stone weighed forty-seven grains, and was composed of phosphate of lime. The second case was that of a woman aged fifty-six, who was admitted under Dr. Whipple's care on October 3, 1881. She had suffered pain on micturition for several years. In 1879 both gravel and blood were present in the urine. She was not aware that she had passed a stone. In October, 1880, she had a sharp attack of vomiting, followed by pain in the left lumbar region and hæmaturia. While under observation, she complained of an increase of this pain, and the belly was generally tender. There was great muscular resistance on the left side, and fulness and tenderness on pressure on the right side. Fluctuation was detected on October 6 in the left loin, and Mr. Haward, who saw the patient on that day, made an incision into the swelling. During the night a copious discharge of pus occurred, with great relief to the pain. No calculus could be found; the urine contained much pus. On November 3, the patient having become worse, the incision was extended, and the wound thoroughly explored. No calculus was found; but as the kidneys and tissues were so firmly matted together, no further operation was deemed advisable. The patient died next day. At the post-mortem examination it was found that the kidney lay in a cavity, whose contents were purulent; that its pelvis was dilated, and communicated with this cavity by a large irregular opening, through which one or two fingers could be passed. Two or three small fragments of stone were found in the calyces; a large branching calculus occupied the calyces of the right kidney. These two cases were brought forward as illustrating the propriety of cutting into the kidney in cases where the diagnosis

of renal calculus is clearly established, and as affording encouragement to the surgeon to perform the operation of nephrotomy in the earlier stages of the disease, rather than to postpone surgical interference until dilatation or suppuration of the organ had occurred.

Mr. CLEMENT LUCAS related a case in which he cut down upon the kidney, but failed to find a stone. The patient was a man, aged forty-nine, who, two years before, had suffered from acute pain and hæmaturia. These symptoms passed away, and he remained free from them for six or nine months, when he was again attacked with profuse hæmaturia, and became very anæmic. He passed triangular clots, presumably casts of the renal pelvis. After a month's observation Mr. Lucas performed the exploratory operation under antiseptics. He regretted that he did not also explore the organ by acupuncture, but at that time thought this was a more dangerous procedure than it had been shown to be. Eleven days after the operation the patient was sitting up, and on the seventeenth day he left the hospital with the wound soundly healed. Great relief was obtained. He had since returned with evidence of phthisis, so that it was possible he had strumous disease of the kidney. Mr. Lucas remarked on the simplicity of such exploratory measures, which he would recommend in any doubtful case.

Mr. BARKER said that the danger of hemorrhage from the renal incision was not great. He referred to Prof. Brandt's case of "hernia of the kidney," following a wound in the loin, the organ being removed on the fourth day after injury. Mr. Barker had related this case in his paper in the *Medico-Chirurgical Transactions* (vol. lxiii.). In one case, he was struck with the rapidity with which the bleeding ceased after incision of the organ; and that was also shown in Mr. Beck's case, where very moderate pressure sufficed to arrest the bleeding. Such facts proved that incision or puncture need not be feared.

Mr. MORRANT BAKER pointed out the importance of recognizing a totally different class of cases from those just recorded—such cases as the one he related in a paper at the Congress, where there was a renal abscess; on exploration, there was found a large branched phosphatic calculus, which was only dislodged with much difficulty and considerable hemorrhage. The calculus weighed nearly two ounces. The patient never rallied, and died three days after the operation. This kind of case was distinct from cases where only small stones occurred; and it was a question whether, in such a case, it would not be better to remove the whole kidney.

Mr. BARWELL had not removed a stone from the kidney, but had removed the whole kidney. He thought it desirable not to let cases in which the presence of a stone was suspected go on, with prospect of ultimate damage to the organ, when a simple incision and puncture would indicate the nature of the mischief. The incision, too, was made in a part free from danger. Hardly any pyrexia followed. It would be interesting to learn whether a stone would again form, or the kidney become mobile.

Dr. BARLOW said that Mr. Morris had laid great stress on the difference between cases in which the kidney was healthy and those where pyelitis and destructive changes existed. This point required to be insisted on, for cases such as that described by Mr. Baker belonged to the second class. About three years ago he (Dr. Barlow) had under his care a Jewess, about forty-seven years old, passing pus in the urine, and who had had pain and swelling in the right loin for eight months. Mr. Couper was consulted, and a grating sensation was felt in the swelling. An incision was made, and pus escaped from the kidney, which contained three large calculi. The organ could not be removed; and death took place next day. It was manifestly unfair to nephro-lithotomy to contrast it with such cases as these.

Dr. LONGHURST pointed out that the successful cases appeared to be those

operated on in early life; the fatal ones in older subjects. He knew of a nobleman, the subject of renal calculus, who was advised by a surgeon in Paris to submit to this operation, but he would not accede, and a year later, after a similar attack to that which he had undergone formerly, he died. Both kidneys were found blocked by enormous calculi. In another case, a patient who had symptoms for eighteen months passed one or two small stones per urethram. Hence discretion should be exercised in the selection of cases for operation.

Mr. LISTER said the Society and the authors were to be congratulated on this important series of cases. They were of interest pathologically, for they dealt with calculi of different composition—oxalic, uratic, and phosphatic; and as illustrating the long time that calculi might remain in a kidney without increasing in size, so different from the case of vesical calculi. It seemed as if there were greater concentration of urine in the bladder than in the kidney. The question of diagnosis was also very interesting; almost the sole symptom in Mr. Butlin's case was the neuralgia in the testicle, hæmaturia being absent. It reminded him of one of John Hunter's cases of stone in the bladder. As to the operation itself, the incision in the loin was devoid of danger, especially if antiseptics were used. He thought an acupuncture-needle more convenient to explore the kidney than the needle used by Mr. Beck, who, however, was not only able to detect the presence of the stone, but also to estimate its size. By such a method the surgeon might decide whether the stone were too large to be extracted from the organ, which would then have to be removed entire. The free hemorrhage, and its rapid arrest in Mr. Beck's case, reminded him (Mr. Lister) of the hemorrhage that ensued on incision of the liver in a case of hepatic abscess seen with Sir Joseph Fayrer. Sir Joseph remarked that such free bleeding often occurred, and was of no consequence. In the renal operation, it seemed better to incise the renal substance than the pelvis of the organ.

Mr. HAWARD, in reply, said that he was glad to have heard the opinions in favour of early operation, and agreed with Mr. Baker that in advanced cases removal of the whole organ was preferable to attempted extraction of the calculus. Removal of the kidney in these cases was not always a simple matter, and sometimes impossible—*e. g.*, in the second case related by Dr. Whipple and himself. —*Med. Times and Gaz.*, Feb. 4, 1882.

A Case of Partial Resection of the Small Intestine.

MOLODENKOW and MINN report in *Centrbl. f. Chirg.*, 1881, No. 46, a case of right inguinal hernia of one and a half year's standing, in a man aged 21 years. Strangulation had existed for four days when the patient was seen, and vomiting, meteorism, elevated temperature, and redness of the skin over the temperature were present. Herniotomy was followed by the escape of offensive fluid, and the loop of gut was found to be gangrenous, perforated at two points, and much discoloured over its whole extent. Partial resection of the diseased portion was performed between heavy threads of silk passed around the sound portion and the fingers of an assistant, and partial ligature of the mesentery with catgut, and its separation with the intestine. The two borders of intestinal wounds were then united with twenty-five double fine catgut sutures. The sac was extirpated, and the external wound closed with silk sutures, and a double drainage-tube inserted into the abdominal cavity, through which a solution of borated solution, 1 to 20, was injected. Vomiting and fever soon disappeared, and a normal stool was passed on the third day. The drainage-tubes were removed at the end of three weeks.—*Arch. Gén. de Méd.*, Jan. 1882.

Resection of the Intestine: Cure.

ROGGENBAU reports in *Berlin. Klin. Woch.*, No. 29, 1881, the case of a woman, aged 74 years, who had had an easily reducible right crural hernia for thirty years, in whom strangulation of the intestine had occurred thirty-six hours before her admission into the hospital. She then had bilious vomiting, but no peritonitis; as energetic taxis had already been fruitlessly performed, herniotomy was at once resorted to under the antiseptic spray. A rupture of the intestine being produced in the attempt to reduce the hernia, a portion of the intestine, 32 centimetres long on its convex border, was resected, and the Czerny suture with carbolized silk made use of, the two ends of the intestine being compressed at the ring by means of sponge during the insertion of the suture. The sutured intestine was then reduced, and the sac and mesentery ligated and excised. The first fecal passage was on the fifth day after a dose of castor-oil. A cure was effected.

V. BAUM reports in the *Berl. Med. Woch.*, No. 20, 1881, a case of right crural hernia occurring in a woman, aged 48 years, on an attempt to lift a heavy weight, and which was irreducible, immediately followed by symptoms of strangulation of the intestine; herniotomy was performed four days later. When admitted to the hospital, two and a half months later, an artificial anus $\frac{1}{2}$ centimetre in diameter had been formed from gangrene of the intestine situated two centimetres below Poupart's ligament. Resection of the intestine was performed, Gimbernat's ligament and arch being divided, and the intestine drawn out for a length of eleven centimetres on its convex border, and five and a half on its concave border. Czerny's suture was employed with carbolized silk; the operation was performed under antiseptic precautions. On the second day gas escaped by the anus; on the fourth, liquid stools, and on the sixth day the fecal evacuations became normal. At the end of six weeks, in spite of a suppurative parotitis, the patient was discharged from the hospital cured.—*Arch. Gén. de Méd.*, Jan. 1882.

Rupture of the Intestine.

After several specimens had been exhibited at the Vienna Medical Society (*Wien Med. Woch.*, 1881, No. 47), Prof. ALBERT observed that he had for some years past laid down the position that no clearer indication for the performance of laparotomy can be furnished than by rupture of the intestine. The difficulties of the operation are undoubtedly very great, consisting in the difficulty of the diagnosis, and in discovering the injured part. It is true that several cases have been recorded in which the patient lived for some days, but still they always terminated fatally. As from expectant treatment nothing is to be hoped, we should endeavour to overcome the difficulties in the performance of the operation. As to diagnosis, rupture of the intestine has the following points in its favour: the violence of the force producing it; the special liability of the rupture to occur at certain parts of the canal, the most usual of these being in the vicinity of the duodenum; and the severity of the pain. According to Beck, in mere contusion of the intestine the pain gradually at times diminishes, and is aggravated by pressure, while in rupture it is continuous. The presence of air in the abdominal cavity also favours the supposition of rupture existing.—*Med. Times and Gaz.*, Jan. 28, 1882.

Splenotomy in Leucocythæmia.

In the *Lancet* for February 11th, Mr. HERBERT COLLIER publishes a table in which it is seen that out of a total of twenty-nine cases splenotomy has been performed no less than sixteen times for leucocythæmia, and on thirteen occasions

for various other morbid conditions of the spleen. It is equally apparent that out of the thirteen cases in which leucocythæmia was absent, no less than eight recoveries are recorded; while out of the sixteen in which the latter disease was present, there is no instance in which the patient recovered even from the primary effects of the operation. Now, it must strike the most casual observer that the fatality, in these latter cases, is due to something outside the mere effect of the operation, which in itself appears to be less dangerous than one might reasonably be led to expect. And surely, few will deny, although many appear to forget, that this "something" is actually present in these cases, and readily explains the cause of surgeons losing at the rate of a hundred per cent. after splenotomy in leucocythæmia. "Firstly, that the enlargement of the spleen in leucocythæmia appears to be only a part of a general disease affecting the glandular system as a whole; and, secondly, that in splenotomy for such a disease there is a predisposition to hemorrhage, with which surgery is incompetent to deal. It can neither be foreseen by any amount of care, nor coped with by any amount of skill. Under these circumstances there is no shirking the conclusion that the operation is physiologically unsound and surgically unsafe, and for leucocythæmia should not be performed."

A New Method for the Operative Treatment of Extrophy of the Bladder.

Encouraged by the results of the experiments on animals by Gluck and Zelier, and on account of the difficulty and usually unsatisfactory results of the ordinary operations, E. SONNENBURG operated on a boy aged 9 years with a great defect of the anterior wall of the bladder, and projection of the posterior wall, by extirpating the bladder and connecting the ends of the ureters in the dorsal groove of the penis. In order to avoid unnecessary injury to the ureters, the vesical mucous membrane was excised from above downwards, carefully separating it from the peritoneum, and avoiding the ureters, which was facilitated by their distension with sounds. Only slight bleeding was caused, and that was easily restrained by ligature; great care was also taken to avoid the inguinal canal, so as not to cause an inguinal hernia. After the bladder was freed on all sides, it was separated from the pubic bones, and the ureters then carefully dissected out from the vesical wall, and fastened with stitches into the vivified dorsal groove of the rudimentary penis, the prepuce being sewed to the perineum in order to draw the ends of the ureters out from the wound. The next step of the operation was the closing of the defect in the abdominal walls. During the first four days the urine was conducted externally by catheters inserted into the ureters, and by salicylated compresses, when union of the ureters to the penis had completely taken place, and four weeks later the entire abdominal wound was closed with the exception of a space the size of a dollar, which was filled with healthy granulations.—*Centrb. f. d. Med. Wissen.*, Jan. 14, 1882.

Treatment of Wounds of the Bladder.

In an original memoir (*Revue de Chir.*, Nos. 6 and 7, 1881) on penetrating intraperitoneal wounds of the bladder, Professor E. VINCENT of Lyons states that the operation of laparotomy is the only suitable treatment for such injuries when followed by an abundant effusion of urine into the peritoneal cavity. This treatment alone permits—1. Direct inspection of the seat of injury; 2. The determining of the presence and of the nature, if they are present, of complications; 3. Removal from the abdomen of effused blood and urine; 4. Cleansing and disinfection of the peritoneal cavity; and, finally, the prevention of further effusion

of urine by applying sutures to the wound through the coats of the bladder. This plan of treatment is rendered justifiable by association with the antiseptic method, and also by the success of laparotomy in abdominal surgery. Moreover, in cases of penetrating wound of the bladder, death is an almost certain result if nothing be done, and even if any treatment short of laparotomy be applied. From an analysis of three reported cases in which wound of the bladder has been thus treated (Walter of Pittsburgh, Heath, Willett), and also from the results of numerous experiments on dogs, Dr. Vincent has drawn the conclusions that it is of great importance in instances of this injury to have recourse to laparotomy as early as possible, and that in this plan of treatment particular care must be taken in applying the sutures to the vesical wound. His experimental researches have demonstrated, it is stated, that intraperitoneal wounds of the bladder are capable of healing by primary intention if securely closed by suture, and that this union is accomplished very rapidly by all the coats of the bladder, except by the epithelial layers of the mucous coat. The outer layer of this coat and the muscular coat join together very quickly, yet with less readiness than the peritoneal coat, the proliferation of which commences almost immediately after coaptation. The sutures are applied very closely together, and in a double set. In one set—the sero-muscular—each suture is passed through the peritoneal and muscular coats of the bladder on each side of the wound; in the other set—the sero-serous—the peritoneum only is traversed, a considerable width of this coat being included on both sides, so that when these sutures are tied wide serous surfaces are brought together in close contact. The mucous membrane of the wounded bladder is not included in any of the sutures.

Dr. Vincent concludes from his experiments on dogs that by this plan the wound may be securely closed, and that sutures thus applied will resist vesical tenesmus, and any effort of active contraction or of passive expansion that may subsequently be made by the bladder. There need not, he states, be any fear of subsequent perforation of the vesical wall, through formation of fistulæ along the track of the sutures or in the intervals, or of any ulterior deposition of lithates around sutures shed into the cavity of the bladder. The sutures, being intraparietal, remain in or near the outer surface of the organ. In cystorrhaphy the author prefers a suture of silver wire or of silk to one of catgut. The last material breaks too readily, and is likely to melt away too quickly. Before closing the abdominal wound, it is thought necessary to test the security of the vesical suturing by injecting some coloured and indifferent fluid into the bladder.

From a series of experiments on dogs, Dr. Vincent has made out that gunshot wounds also of the bladder heal by immediate union after application of sutures according to the above described method, unless the deflagration of the powder, or the heat of the projectile, have destroyed the vitality of the tissues at the edges of the wound, and rendered local gangrene inevitable. In such cases, the burnt lips of the perforation should be removed, and adjacent portions of the vesical walls also excised, until the tissues are seen to bleed on section. Dr. Vincent states that, in his experiments on dogs, he has now proved that, as a rule, immediate union results from the immediate application of sutures in intraperitoneal wounds of the bladder by laceration, and through the action of cutting instruments and fire-arms. In such cases, laparotomy, with suturing of the bladder and removal of blood and urine from the abdominal cavity, is likely to prove successful on the dog, when performed within eight hours and a half after the receipt of injury; but in Dr. Vincent's hands, always failed after an interval of twenty-four hours, the animals having succumbed to urinary poisoning. In conclusion, Dr. Vincent, impressed by the success of his experimental investigations on early laparotomy and stitching of vesical wound, argues in favour of suprapubic over

perineal lithotomy, and asks why the former operation, which affords free and ready access, is exempt from the danger of wounding important vessels, and is less likely to result in phlebitis and septic poisoning, is not more frequently practised.—*London Med. Record*, Jan. 15, 1882.

Spontaneous Cure of Spina Bifida.

Mr. R. A. DOUGLAS LITHGOW publishes the following case: Mrs. V., a healthy woman of the labouring class, free from any hereditary taint so far as could be ascertained, was delivered by an assistant of a female child, which was found to be the subject of spina bifida, although in all other respects healthy and well developed, in October, 1879. The mother received instructions as to local treatment, especially as regarded careful nursing. The tumour, about three inches in diameter, and circular, was situated over the last two lumbar vertebrae in the median line, where a large sulcus could be felt. It was semitransparent, fluctuating, evidently the result of arrested development in the spinous processes and laminae, and the largeness of the sulcus in the canal enabled the tumour to assume the non-pedunculated form. The tumour was very tense and shining whilst the infant was held in the sitting position, and I had no doubt that it communicated with the cavity of the theca. In February, 1880, when the child was more than three months old, the diameter of the tumour had increased to five inches, thus giving about fifteen inches as the circumference; and it projected one inch and a half from the plane of the body. Otherwise, there was no apparent difference; and, in the mean time, the child had thriven well, and been free from any symptoms of hydrocephalus, convulsions, paralysis, or local inflammation.

When the child was six months old, the tumour began to lessen, and at the end of ten months it had entirely disappeared. When sixteen months old, I had an opportunity of making another examination, when there was nothing to be seen but an indurated cicatrix, almost level with the surrounding skin. The bones were completely ossified, and the child in perfect health.—*Brit. Med. Journ.*, Feb. 11, 1882.

Control of Hemorrhage in Hip-joint Amputations.

In the *Archiv für Klin. Chirg.*, Bd. 26, Heft 4, Prof. TRENDLENBURG, of Rostock, describes a method of amputation at the hip-joint which he has devised with the view of avoiding the risk of severe hemorrhage, so apt to be experienced in this operation. The principle of this method is the compression of the entire tissues of the flaps before the division of the large vessels, before, indeed, the flaps are cut. In this JOURNAL for Oct. 1876, Dr. David Newman gave a description and drawing of a knife which he had devised for amputation at the hip-joint, in which exactly the same principle is applied. Professor Trendelenburg, indeed, seems to have derived his idea from Dr. Newman, for he acknowledges that his operation is similar to that proposed by him. The description of Trendelenburg's operation is as follows: A steel rod 38 ctm. long, 6 mm. broad, biconvex on section, and 2 mm. thick at the centre, with blunt edges, but provided with a removable lance-shaped point 3 ctm. long, is passed obliquely through the soft parts in front of the joint, in the same way as the two-edged knife in the well-known method of Lisfranc, only about 2 ctm. higher. The rod enters therefore about 4 ctm. below the anterior superior spinous process of the ilium, passes between the femur and the femoral artery, and emerges at the fold of the scrotum. The point is now removed, and an elastic tube or band firmly wound in figure-of-eight fashion round the ends of the rod, and passing in front

of the thigh. In this way the great vessels of the thigh, and all the soft parts in front of the joint are compressed. Lisfranc's knife is then introduced 1 to 2 ctm. below the rod, and by cutting from within outwards in the usual way the anterior flap is formed. If an elastic bandage has been previously applied to the limb slight bleeding may take place from the surface of the wound not belonging to the flap, and some small arteries may require to be tied. In the flap the femoral artery and vein and any larger vessels observed are next ligatured, the India-rubber band is then loosed, the rod removed, and the ligaturing of the vessels in the flap completed. Next follows the opening of the joint by an oblique incision, the division of the ligamentum teres and the posterior part of the capsule, in which no hemorrhage of any account takes place. At most the acetabular artery spouts. The head of the bone having been freed, it is disarticulated, and the steel bar passed obliquely behind it through the soft parts. The direction of the bar is parallel to its former position, the point of entrance lies about 2 ctm. behind that of Lisfranc's knife, and the point of exit is at the tuber ischii. In its passage the rod traverses the open joint at the lower edge of the acetabulum. By winding the band round both ends of the rod, and across the posterior surface of the thigh, the soft parts situated behind the joint are compressed, the Lisfranc knife is obliquely introduced behind the head of the bone, and the limb completely separated, a small posterior flap being formed. Finally, the gluteal arteries are ligatured, the tube loosed, and the rod removed. Slipping of the rod and tube is impossible, as the rod lies each time in the special canal formed by the puncture.

Trendelenburg has operated in this way in a case of rapidly growing sarcoma of the lower half of the femur in a girl aged 15. The wound suppurated at first pretty profusely, and some portions of tissue sloughed. How far this was the consequence of excessive constriction Trendelenburg cannot say. The wound healed with open treatment and rest. The patient died two months after with pulmonary symptoms, due as was shown on *post-mortem* examination to secondary sarcomatous deposits in the lungs.—*Glasgow Med. Journ.*, Feb. 1882.

Subcutaneous Division of the Neck of the Femur for Ankylosis.

A committee of the Belgian Royal Academy of Medicine has sent in the following interesting and critical report on a case of Adams's operation of "subcutaneous section" of the neck of the femur for rectangular ankylosis of the hip. A young man, aged 23, with one hip ankylosed in a bad position, came to M. SERVAIS to have the condition remedied. When standing erect, he could not touch the ground with the toes of his left foot, unless his back were enormously hollowed. When lying supine with the back flat, the left thigh was perpendicular. Walking was difficult. He had borne with his deformity for twenty years, but in 1879, he wished to marry, and love brought him to the consulting-room of M. Servais, who proposed to him the operation. (Then follows a brief history and description of Adams's operation.) In M. Servais' operation, the section of the bone by sawing occupied three-quarters of an hour. The limb was afterwards placed *dans une position physiologique*, and over the wound was applied a compress wet with a solution of arnica (6 to 100). The limb was enveloped in plaster-wadding ('gypso-ouaté'). This dressing was removed in five days, and extension was resorted to. All went well for twenty days, when the patient became intractable, got up without leave, and a serious accident resulted. The fragments of the freshly divided femur wounded either the femoral artery or one of its large branches, and an alarming hemorrhage came on. Informed of this occurrence twelve hours afterwards, M. Servais, without hesitation,

tied the femoral artery below Poupart's ligament. The hemorrhage ceased, but another danger supervened. Blood was extensively infiltrated, the patient was weak, and inflammation attacked the thigh. Large incisions, drainage, and an internal treatment by tonics, successfully combated this inflammation; the patient was saved.

Towards the end of the second month, M. Servais applied Taylor's apparatus; on the seventy-fifth day the patient left his bed. From the sixth month the young man's condition was excellent. The success of the operation was henceforth undeniable. The deformity has gone, the man walks without limping and without apparatus; the limb has developed since the operation. The union of the fragments is very firm; but, from time to time, a small opening appears, and gives egress to a few fragments of bone. The general state is better than before the operation. For more than a year, the young man has resumed his work as a lapidary. If this operation shows the ability of the operator, it shows also the dangers which the operation caused this young man to run. If we add to his risks a case of death from purulent infection, and another case of death from hemorrhage, resulting from a wound of the femoral artery, it will be seen, perhaps, that for a list of fifty cases of "subcutaneous division of the neck of the femur," the account of accidents which may complicate this operation is already serious.

The committee are astonished that this deformed ankylosis of the hip, existent throughout the period of growth and of development, has not brought with it a shortening of the limb, capable of impeding walking, in spite of the operation. We regret that in his work, unfortunately very curtailed, the excellent English surgeon has told us nothing about this point. Without accepting, concerning the benignness of "subcutaneous section of the neck of the femur," the opinions of MM. Adams and Servais, the committee judge that this operation is indicated in the cases where a vicious ankylosis of the hip makes the limb useless. But the surgeon ought to be well persuaded, and he should not permit the patient or his friends to remain ignorant that the operation is serious, and he should only operate when asked. In the case of deformed ankylosis of the hip, surgeons have put in practice, for many years, a method less dangerous than that of Adams, viz., fracture of the neck of the femur. Nélaton, Péan, Tillaux, and many others, have been most successful with it. We are the more compelled to recall this success, because it has been gained with less risk to the patients. [In the course of the subsequent discussion, it appeared that the committee had never seen the patient whose case is the subject of the report.—*Rep.*]—*London Med. Record*, Dec. 15, 1881.

Resection of the Hip.

The following is an abstract of an original article by Prof. OLLIER on resection of the hip, with regard to its indications and its definite result (*Revue de Chir.*, Nos. 3, 5, and 7). Resection of the hip is regarded by the author as one of the great gains of modern surgery. The failures that attended the earliest attempts at this operation in France prove nothing against it. When practised on rational indications it is very often attended, in young subjects of suppurative coxalgia, with results that are favourable with regard to the preservation of life.

The dangers of this operation have been considerably diminished through the antiseptic method. But in estimating the gravity of the proceeding, one should not forget that in its application to cases of severe and progressive coxalgia, an affection likely to terminate speedily in death, it ought not to be reproached with those cases which it has not been able to cure, but, on the other hand, should only be credited with the patients that it has saved. Statistics, which give

merely the numbers of recoveries and deaths, can lead but to erroneous conclusions. The great mortality that has attended the performance of the operation in France is due to the fact that it has been applied only in desperate cases, whilst the success of operators in other countries is to be attributed mainly to earlier recourse to operation, and to frequent intervention in cases where cure might have been probably effected by drainage and rest. It is this difference in the appreciation of indications, according to localities and epochs, that renders difficult any comparison of diverse series of observations. Considered with regard to the ulterior growth of the resected limb and the orthopædic and functional result, the value of resection of the hip has hitherto, notwithstanding the great number of observations recorded in statistical tables, not been definitely appreciated. Much confusion has prevailed on this point, through inexact measurement and too hasty observation. The arrest of growth which follows resection of the hip bears relation to the importance of the conjunctive cartilages sacrificed during the operation, and to the change in the nutrition of the limbs, due to the primary lesion and to the disturbance of function which this has caused.

The arrest of growth, from this latter point of view, cannot be ascribed to the resection; since this operation has for its aim and result the removal of the cause which impairs the general nutrition of the limb. The femur, like all the long bones of limbs, does not grow equally at its two extremities. The growth at its lower extremity about doubles its growth at the superior extremity, in other words, whilst it is extending downwards by half an inch, it extends upwards by only a quarter of an inch. This relation of one to two between the two conjunctive cartilages of the femur is not constant during the whole period of growth. It represents the total growth from birth to adult age; but, at the beginning of life, the upper extremity of the femur grows faster than the lower, and until the fourth or fifth year, the growth of the bone takes place equally at its two extremities. At the end of the fifth year the rate of growth at the superior extremity is reduced in relation to that at the inferior extremity. From the age of four years to the completion of growth, the relation does not exceed one to three; that is to say, the femur gains one centimetre above, whilst it gains three centimetres below.

Removal of the cartilage of conjunction from the upper extremity of the femur of a subject under the age of four years, renders this bone liable to an arrest of growth (about nine centimetres) in consequence of the abstraction of the physiological elements of its increase in length. To this cause of arrest of growth must be added the general atrophy of the bones of the limb, and the deficiency which will result through an extensive diaphysal resection, when care has not been taken to preserve the periosteal sheath. The conjunctive cartilage of the head of the femur is the only cartilage of the upper extremity of the femur which serves for the increase in length of this bone, considered either from a statical or from a functional point of view, in walking and standing.

The "serviceable length" of the femur is measured by the distance from the inferior bicondyloid plane to the most elevated point of the head. The continuation of the increase in length through the subtrochanteric cartilage after decapitation of the femur, does not compensate for the arrest of growth at the neck of the bone. The subtrochanteric cartilage assists in the growth of the femoral diaphysis or, at least, in that of its external part; and thus, notwithstanding removal of the head and neck of this bone, the femur after resection of its upper extremity will seem to be as long as the sound bone of the opposite side, if it be measured from the summit of the trochanter to the inferior border of the outer condyle. But this length of the external border does not represent the "serviceable length" of the bone. Notwithstanding the almost equal length

of two femora measured along their external borders, the limb on the side of the operation may really be shorter by several inches, in consequence of elevation of the femur on the pelvis.

After resection of the hip an articulation, movable and at the same time strong, may be formed between the thigh and the pelvis. But the type of articulation is completely changed. Instead of a head rolling in a cavity, there is the upper extremity of the femur united to the pelvis by fibrous bands, firm, but still more or less supple, so that in locomotion there is always a tendency in the femur to ascend, and in the pelvis to descend. The pelvis is thus suspended, as it were, on the femur.

The subperiosteal method alone enables us to take advantage of all the elements which can contribute to produce an articulation, which is, at the same time, both movable and strong. Through the abundance of the periarticular fibrous formations, the chances of ankylosis are, all other things being equal, much greater after resection by the subperiosteal method than after resection performed by the old method.

The arrest of growth of the femur after resection of the hip may be compensated by inclination of the pelvis. It is this compensation that may lead one to regard the lower limbs as almost of equal length, although the resected limb may really be seven or eight centimetres shorter. The possibility of obtaining, by suitable consecutive treatment, this sinking of the pelvis on the side of the operation, neutralizes in great part the inconveniences of resection from the point of view of ulterior growth of the limb.

Notwithstanding the good orthopædic and functional results that may be attained by resection of the hip, particularly if it be performed before the appearance of irreparable disorders in the bone and in the peripheral tissues, this operation should not be applied except in cases with very clear indications, and until after all the resources of rational expectation have been tried. The cases in which the surgeon should at once have recourse to operation are very rare, and the chances of the success of preliminary operations (repeated puncture, incisions, arthrotomy) are much increased by the practice of antiseptic dressings.

But it is necessary to have recourse to resection in cases where the bad symptoms increase, notwithstanding antiseptic incisions and drainage.

It is difficult to be clear *à priori* of the osseous or articular origin of hip-joint disease; but although in the infant the disease is generally osteopathic in the first place, and for this reason apparently favourable for resection, cure may yet be attained in the majority of instances of suppurating infantile coxalgia through a methodical expectant treatment, aided by the resources of hygiene. But resection, suppressing at once tubercular deposits of osseous origin, is, in cases which have no tendency to recover, the surest means of removing the source of suppuration, and of preventing general tubercular infection.

The results of resection will be the better from an orthopædic and functional point of view, and will resemble the more those obtained by experiments on animals, the earlier the period at which the operation is performed.

Although a movable articulation may be always attained by a well-conceived operation and well-directed after-treatment, the surgeon ought not always to seek for such result. Under the conditions in which resection for articular suppuration is most frequently performed, it is better to have an osseous ankylosis in good position when the patient is compelled to work for his living. With osseous ankylosis of the limb in good position, we have a limb that is, speaking generally, more useful than a movable limb, and one less liable to relapse.

Resection performed in cases of injury or of acute suppurative arthritis will, without doubt, afford all that a well-arranged operative method may permit one

to expect; but when the bone is much diseased, and surrounded by disorganized soft parts, the surgeon is more likely to attain, through his operation, an imperfect articulation, and one liable to inflame afresh under the influence of repeated pressure, and of movements of the limb. After resection, or after hip-joint disease, with prolonged suppuration, osseous or strong fibrous ankylosis is the most sure means of attaining radical cure, or at least a positive cessation of bad symptoms.—*London Medical Record*, Jan. 15, 1882.

Galvanism in Coxalgia.

M. VERNEUIL brought under the notice of the Paris Société de Chirurgie, at a meeting in October, an episode in the progress of coxalgia, which has not been sufficiently noted by writers on the subject, viz., a special form of recurrence of coxalgia after apparent cure. He gave the following as a type of this class of cases:—

Five years since, he saw, with M. Leudet of Rouen, a girl aged 9 who was attacked with coxalgia of a mild form at the outset, which M. Verneuil thought from its antecedents to be of a rheumatic character, and of which he made a favourable prognosis. The child was placed in a Bonnet's apparatus, which, shortly afterwards, was succeeded by Bouvier's trough. The cure was tedious; a small abscess formed outside the joint, and was cured in a fortnight. Fifteen months ago, that is to say, three years and a half after the appearance of the affection, M. Verneuil declared the child to be cured. Both limbs were of precisely the same length; there was not the least lumbar lordosis, and there was only a small remnant of stiffness in the joint. During this time, the girl had become considerably developed, and the menses had appeared. M. Verneuil, therefore, announced that cure was complete. Shortly afterwards, the father of the girl came to tell him that she limped, and in six months the patient was again under his charge. There was, again, considerable deformity, very marked lumbar lordosis; apparent shortening was brought on by the drawing up of the pelvis, but there was neither swelling nor pain, nor any trace of inflammatory action. The faulty position was reproduced without any trace of inflammation. Several surgeons having persuaded the father not to proceed further, and persisting in declaring the child to be cured, although the deformity continued to increase, she was again brought to M. Verneuil. He sought for something in the case analogous to the mechanism of flexion consecutive on inflammation of the knee by paralysis of the triceps, and discovered that the muscles of the nates were completely paralyzed. He thought, therefore, that the deformity was reproduced by the contraction of the psoas, the adductors, and the sartorius muscle. Under anæsthesia, by chloroform, he corrected the faulty position; the straightening was perfect, and there was complete symmetry. He again placed the girl in one of Bonnet's troughs; a month afterwards he applied Bouvier's apparatus, ordering that it should have a lengthened trial; and also ordered faradization of the gluteal muscles; but it was a very long time before any good results followed this treatment.

The latter fact gave to M. Verneuil the explanation of many others; the case was one of recurrence of deformity without return of inflammation of the joint; of muscles consecutively rendered powerless, whilst the antagonistic muscles retained their contractility. These facts led M. Verneuil to find in the muscular system a physiological explanation of the two periods of coxalgia. In the first stage, there are abduction, rotation outwards, evident lengthening, and permanent flexion. In the second stage, there are, on the contrary, abduction, rotation inwards, and shortening by the raising of the pelvis. These observations led M.

Verneuil to form the following theory: The inflammation of the joint is propagated to the muscles immediately in relation with the capsule, that is to say, to the psoas and the small gluteal muscles, leading to elongation of the limb with abduction. After a time these muscles become atrophied and lose their power; the inflammation spreads to the most distant muscles, that is to say, to the abductors and the sartorius; then come rotation inwards, shortening by elevation of the pelvis, that is to say, metamorphosis of position in the first stage of coxalgia; in the second period, slow contraction of the healthy muscles at the same time with the impotence of the muscles originally attacked. An important therapeutical indication is deducible from this fact, that of galvanization of the enfeebled muscles.—*London Med. Record*, Dec. 15, 1881.

Isolated Disease of the Semilunar Fibroid Cartilages in the Knee-Joint.

In a recent paper with reports of cases (*Centralb. für Chir.*, Nos. 44, 45, 1881) Professor KOCHER of Berne, after a reference to the views of Volkmann on the important part played in fungous articular disease by primary circumscribed deposits in bone, states that other structures of a joint may be the seats of isolated disease, resulting after a time in general articular disorganization. Three instances are recorded from the author's practice of circumscribed fungous disease of the internal meniscus of the knee, which disease he would call meniscitis fungosa. In one of these cases, the subject of which was a man, aged 65, the disease had lasted for nearly nine months, and had obstinately resisted treatment. Shortly before the case came under the author's notice, there had been swelling of the knee from serous effusion. This patient was cured after the application over the swollen and tender meniscus of the actual cautery. In the two other cases, one patient being twenty-one, the other six years of age, there was not only intra-articular effusion, but the disease had gone on to suppuration and the formation of sinuses. In each of these cases, the diseased meniscus was excised with very good result, and the patient recovered, with free movement of the affected knee. The diagnosis of diseased meniscus in the knee seems to be attended with some difficulty. In Professor Kocher's cases, the most marked swelling and tenderness were by no means circumscribed in correspondence with the margin of the affected cartilage. Before incision into the joint, the internal condyle of the femur in one case, and the head of the tibia in a second case, were thought to be the main seats of the disease. The two cases in which a meniscus was removed prove, it is stated, that the removal of one of these structures impairs so slightly the functions of the knee, that the patient is subsequently able to extend his leg forcibly and to bend it at a right angle to the thigh. A fourth case is reported, of thickening of the external meniscus of the left knee in a lad aged fifteen, through chronic inflammation of the joint. This enlarged meniscus presented complete extension, interfered with flexion, and caused a loud crepitus. Excision of this structure was followed, after healing by primary intention, by very good functional results. This case proves that the external meniscus may be removed without any consequent impairment of the functions of the knee-joint. In this, as in the cases of removal of the internal meniscus, the leg could not be carried beyond the ordinary degree of extension, and so the cases have some physiological interest by showing that the menisci do not act as checks in extreme extension of the lower limb. In concluding this paper, Professor Kocher reports a case of advanced disease of the knee, in which recovery with a movable limb followed arthrotomy and extension of the diseased and ulcerated portions of articular cartilage.—*London Med. Record*, Jan. 15, 1882.

Excision of the Tarsal Arch.

Excision of the tarsal arch has been now so often performed for obstinate cases of club-foot that some material for forming a just appreciation of its value exists, and we regret that the President of the Clinical Society did not see his way to adopt Mr. Marsh's proposal for the appointment of a Committee of that Society to investigate the cases and report upon the procedure. The questions that arise are these: Are there cases of club-foot in which the usual treatment by manipulation fails? If so, is excision of the tarsal arch the best means of dealing with them? Can this operation be wisely substituted for the milder treatment in other simpler cases? As Mr. Hayward insisted at the Clinical Society, there are very few, if any, cases *in children* in which tenotomy and judicious and long-continued after-treatment will not accomplish cure; and we hope to see this operation reserved entirely for adults in whom the deformity of the bones and other changes have rendered other methods of treatment useless. In patients of the poorer classes, however, there is another consideration to be weighed—that is, time. A successful excision of the arch effects a cure in a few months, while an obstinate case in a child, ten years of age, say, may require as many years of skilful treatment by other means; and when the effect of the treatment is such that a cripple becomes able to compete successfully with his fellows in almost all kinds of labour, the question of time is of serious moment. But in suitable cases it is open to doubt whether the results of this operation are superior to those of Chopart's amputation, which is its alternative, while it would seem that its dangers are greater. Mr. Davy has lost by death one out of seventeen operations, and König has lost one out of three, both patients dying from septicæmia. The danger, then, of excision of the tarsal arch ought effectually to prevent its being substituted for the more general treatment of club-foot in simple cases, even although it cures in a shorter time; and it certainly has not yet been demonstrated that its results are superior to those of amputation, which is safer. It is eminently a case in which a judicial investigation might be expected to do good.—*Lancet*, December 24, 1881.

Tripier's Amputation of the Foot.

The results of Chopart's amputation through the transverse tarsal articulation are often somewhat disappointing. The caries for which the operation is performed may recur in the os calcis and astragalus, or more often the stump becomes everted and depressed anteriorly, so that the cicatrix is exposed to pressure and friction, and as a result ulcerates. Division of the tendo Achillis has been found ineffectual to prevent this displacement of the foot, because it is a purely mechanical effect, depending upon the fact that normally the os calcis is placed obliquely, forming the posterior extremity of the longitudinal arch of the foot, touching the ground only at the posterior extremity. When the anterior part of the arch is removed, as in Chopart's amputation, the front of the os calcis is depressed and the weight of the body tends to push the astragalus down and forwards, and the shape of the os calcis leads to its eversion. A careful selection of cases, and using a boot specially designed to correct this tendency to displacement, may prevent these ill results. But M. Tripier, of Lyons, has designed a modification of the operation which he hopes will remove all danger of them. Instead of two flaps he uses the oval method of amputation. Starting from the outer side of the tendo Achillis, and carrying the incision forward below the outer malleolus, he encircles the foot opposite the tarso-metatarsal joint. He reflects the soft structures from the bones in the usual manner until able to disarticulate

the os cuboides and scaphoid. He then detaches the periosteum from the under and back surfaces of the os calcis as high as the sustentaculum tali, and saws across that bone at that level, making the plane of the sawn surface at right angles to the vertical axis of the leg. The posterior tibial nerve is to be cut as high up as possible, and the wound treated in the usual way. By this means the surgeon is able to examine the cancellous structure of the os calcis, and can detect any latent foci of disease if such exist. The sawn surface of the os calcis being horizontal, it supports the weight of the body without tilting, and on a good broad surface. The soft parts are divided further back, shorter flaps being required than in Chopart's original operation, and it is thus sometimes practicable in some cases of injury in which Chopart's would not be. Mr. P. J. Hayes, of Dublin, has already practised this operation on two patients, and speaks highly of the results. His paper on them, in the *Dublin Journal of the Medical Sciences* for December, is illustrated with plates showing the line of incision, the line of section of the os calcis, the stump left, and the special instrument used by M. Tripier to peel off the periosteum.—*Lancet*, Jan. 21, 1882.

Fractures of the Patella.

In an interesting review of the subject of operative interference in fractures of the patella with separation, by M. POINSOT, the following is a *résumé* of his conclusions:—

1st. Puncture of the joint should be practised in all cases where there is much effusion into the articular cavity; it should be immediate, and it is not necessary to follow it by drainage.

2d. After the puncture, and in cases where the ordinary apparatus are insufficient to maintain coaptation of the fragments, suture of the divided patella may be practised, as recommended by Kocher.

3d. In all cases the apparatus should be examined very frequently for the first few days until the articular swelling has subsided.

4th. For several months after the union of the fracture the limb should be provided with an apparatus limiting flexion.

5th. The opening of the articulation with osseous suture is suited to cases in which puncture is not sufficient to remove the articular exudation.

6th. It is necessary also in pseudarthroses and in cases where an excess of callus interferes with the motion of the joint.—*Revue de Chirg.*, Jan. 1882.

Successful Reduction, after Four Months' Malposition, of a Dislocated Third Cervical Vertebra.

DR. LANDON CARTER GRAY reports the above remarkable case occurring in a boy aged 15, in consequence of a fall on the head in a vain attempt to turn a somersault. For thirteen weeks after the dislocation there was none other than a difficulty in deglutition. Then the phenomena came fast and many. First, a vesical paresis; next, a numbness of the left upper extremity; then a numbness of the right leg; then a motor paralysis of both upper and lower extremities; and finally, when he came under treatment, there were found—though the relative dates of appearance could not be ascertained—a paresis of the left face, tactile anæsthesia of the left upper and lower extremities, an occasional tremor, exaggerated tendon-reflex (although there had been no hasty micturition), and contractures of certain muscles of the neck and shoulders.

Over the region of the third cervical vertebra, there was on the back of the neck a projection about as large as a pigeon's egg. Pressure upon it produced

some pain around the point of pressure, but none was felt at the front or side of the neck. The spinous process of the third cervical vertebra was deviated markedly to the right. Inserting the finger into the mouth, horizontally backward on a level with the upper surface of the tongue, a distinct depression could be felt in the posterior pharyngeal wall, corresponding to the third cervical vertebra. In order to make reduction, the boy was laid flat on his back on the table, and etherized until all his muscles were well relaxed. Supporting the head by one hand upon the occiput and the other upon the brow, both hands being covered by those of an assistant, and counter-extension being firmly maintained, extension was made steadily upward to what was deemed a proper degree, and then the head slowly and cautiously rotated from left to right. It was necessary to make this rotation three several times before the bone went into place, each rotation, however, effecting evident improvement, although no tendinous snap was heard at any time. But go into place it did, and without the manifestation of any dangerous symptom.

All the symptoms immediately disappeared, and although they returned somewhat after a second relaxation following violent motion, a second reduction caused a permanent cure.—*Annals of Anat. and Surg.*, Feb. 1882.

OPHTHALMOLOGY AND OTOTOLOGY.

Examination of the Eyes of New-Born Children.

According to the investigations of Jager, the majority of new-born children, 78 per cent., are myopic, while Ely places the percentage at 18, and Horstmann only found myopia in 8 per cent. From the examination of six hundred eyes under atropine in children younger than eight days old KÖNIGSTEIN (*Wiener. Med. Jahrb.* i. s. 70, 1881) did not find a single case of myopia, only a few emmetropic eyes, and very many with hypermetropia over $\frac{1}{2}$, the majority ranging from $\frac{1}{4}$ to $\frac{1}{8}$.

In 40 eyes of infants, Dr. Horstmann found 28 cases of hypermetropia, 8 of emmetropia and only 4 cases of myopia. The iris, as is generally believed, he found to be generally of a bluish-gray colour; he found, however, shades of light bluish-gray to brown, and in some instances the iris was dark brown. He found the remains of the papillary membrane in 21 instances out of 281 children.

The difference in the breadth and appearance of the retinal arteries and veins is not so marked in infants as in adults. In 10 per cent. of the cases examined by Königstein, he found extravasations of blood in the retina which were reabsorbed in a few days.—*Centralb. f. d. Med. Wissen.*, Dec. 10, 1881.

Sulphide of Calcium in Strumous Ophthalmia.

Dr. SNELL states that the sulphide of calcium will be found particularly serviceable in those cases of children with manifest strumous habit, enlarged cervical glands, swollen face, the eyelids tightly closed, photophobia, and where, on opening the eyes, a gush of hot tears is emitted, and examination of the ocular surface discloses one or more phlyctenules on the cornea, or it may be merely increased vascularity of conjunctiva. These cases treated by the ordinary constitutional and local remedies are often tedious, but with the sulphide of calcium, coupled with the usual applications to the eyes, such as atropine and warm fomen-

tations of poppy, or what not, frequently quickly yield a happy result. In other cases also of phlyctenular conjunctivitis or keratitis, and not alone in children, the good effects of this medicine are conspicuous. Of course, like all other drugs, it will be hardly likely to be suitable for, or to benefit, all cases, but he has now employed it with good results so frequently that he is quite satisfied as to its being a useful remedy. After little or no benefit with steel in its various forms, and cod-liver oil, the rapid recovery often after the substitution of the sulphide has been astonishing. The mode of administration is generally in the form of a powder, and from gr. $\frac{1}{6}$ to gr. $\frac{1}{3}$ of the sulphide, with a few grains of sugar of milk, are given about three times daily. In this way children take it readily.—*Practitioner*, Jan. 1882.

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Treatment of the Pseudo-Membranous Conjunctivitis with Local Applications of Quinine.

Mr. JOHN TWEEDY states that since the publication of his first paper on this subject in the *Lancet*, 1880, vol. i. pp. 125 and 282, he has treated four other cases of diphtheritic conjunctivitis in the same manner, and although the cornea remained wholly intact in only one of these, they all recovered with useful sight, and with, at worst, but slight nebulae. To the quinine he ascribes the credit of saving the cornea in these cases from total destruction. Three of the four cases occurred in men and one in a woman. Two began as purulent conjunctivitis of gonorrhœal origin, and two were pseudo-membranous from the first. The former, a man and a woman, were admitted with advanced purulent conjunctivitis of the right eye, the left being free. In both instances, within a few days of admission, and while the inflammation of the right conjunctiva was subsiding, the *left*, in spite of protection by Buller's shield, became the seat of adherent pseudo-membranes. In neither did much pseudo-membrane appear on the right conjunctiva.

As soon as the nature of the disease was definitely recognized, all other treatment, if any, was stopped, and quinine lotion, containing four grains of sulphate of quinine, with a minim of dilute sulphuric acid to an ounce of water, was alone employed. As far as possible the diseased surfaces were kept constantly bathed with the solution, the conjunctival sac being converted, as it were, into a trough holding the quinine lotion. A bowl of the solution was also placed within reach of the patient, who washed the eye frequently and kept a well-soaked compress constantly applied in the intervals. Besides these applications by the patient and by the nurse, the house-surgeon visited each case three or four times a day. On these occasions the lids were everted and the conjunctival sac thoroughly cleansed with the quinine lotion. The superficial disintegrated portions of the exudations were then gently removed with wet lint, care being taken not to aggravate the inflammation by rough handling or by rude attempts to tear off the pseudo-membrane. Usually, the quinine lotion was iced. In two cases the local application of powdered sulphate of quinine was tried at first, or sulphate of quinine rubbed up with an equal part of calomel; but, in addition to causing great pain, the powder did not appear to be so beneficial as the quinine in solution, and was therefore soon abandoned.

He would also emphasize the fundamental difference between the pellicular membrane of ordinary purulent ophthalmia and the parenchymatous pseudo-membrane of diphtheritic conjunctivitis. Extended experience has satisfied him that the two forms are essentially distinct and separate in their pathological as well as in their clinical relations. The pellicular form is amenable to simple treatment, and need not give much anxiety, whereas the pseudo-membranous is terrible in its ravages and appalling in its possibilities. Not a little harm may be

done by confounding these two diseases. An application of nitrate of silver to the pseudo-membranes of diphtheritic ophthalmia increases the damage, whereas judicious applications speedily cure the membranous variety of purulent ophthalmia. The difference is appreciable from the earliest to the latest stages. Even when the pseudo-membrane is thin and detachable, its removal does not expose a swollen and vascular mucosa, but a smooth, pale surface often of a dull leaden hue. Later on the difference is still more marked; the membranous form only affects the epithelial layers of the mucous membrane, whereas the pseudo-membranes always invade the deeper texture, and heal by cicatrization. In all the cases he has diagnosed as diphtheritic conjunctivitis cicatrization was always pronounced.—*Lancet*, Jan. 7, 1882.

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The Extraction of Chips of Iron or Steel from the Interior of the Eye.

Dr. J. HIRSCHBERG has been experimenting with the method of extracting metallic chips from the eye with the electro-magnet, of which he describes the form he has found most suitable. He states that when the foreign body is in the superficial layers of the cornea, or in the aqueous chamber, the magnet is both unsuitable and unnecessary, although it is advisable to have the instrument within reach if it should be needed; with a powerful magnet chips may be withdrawn from the posterior capsule of the lens, and when they are in the vitreous body, the use of the magnet then is especially recommended. In the latter case the operation (of which several cases are reported) is quite safe if the sclerotic section is performed in a meridional direction and covered with a conjunctival flap, and if it is not necessary to employ forceps or spoon.—*Arch. of Ophthalmology*, December, 1881.

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Acute Glaucoma cured by Eserine.

At the meeting of the Ophthalmological Society of Great Britain, Mr. NETTLESHIP and Dr. BUZZARD reported each a case of acute glaucoma cured by eserine. Mr. Nettleship read the notes of a case, which had been under the care of Mr. R. J. Pye-Smith (of Sheffield). The patient, a lady aged 70, had been severely shaken by a fall down-stairs. On the fifth day after the accident, the left eye became acutely glaucomatous ($T + 2$), the cornea steamy, the pupil dilated, vision was reduced to counting fingers, and coloured rings were observed around a candle. The use of eserine disks entirely relieved the symptoms within twelve hours. For a year after this, very slight and transient relapses occurred at intervals of not more than a month. The symptoms, when they recurred, were always removed by the use of the eserine disks. Latterly, the relapses had become less and less frequent, and none had occurred for the last three months. The eye at the present time (two years after the first attack) is normal, and brilliant type (Jüger 1) can be read with the reading glasses which have been in use for several years.

Dr. BUZZARD relates the case of a lady aged 64, to whom he was called on account of severe neuralgia in the region of the supra-orbital nerves, which had been treated by gelsemium for some time. Dr. Buzzard found all the typical symptoms of acute glaucoma. Iridectomy was advised; but, before resorting to that operation, eserine disks were tried, on the advice of Mr. Lawson. Two or three disks a day were used, and an immediate improvement was noticed; and, in six weeks, the patient had completely recovered; she still remains free from disease.

The PRESIDENT observed that both cases were of great value, especially the latter; for in the former, there might be some suspicion that the glaucoma was

due to the injury; in the second case, there was no history of injury, and by so much the case was more satisfactory as evidence that acute glaucoma could be cured by eserine.

Dr. FITZGERALD (of Dublin) had met with one case where the symptoms of acute glaucoma were immediately relieved by eserine. In chronic glaucoma, also, eserine had sometimes yielded satisfactory results in his hands.

Dr. BRAIYEL considered eserine especially suitable for cases like those cited, viz., recent acute or intermittent glaucoma. He attributed these forms of the disease to an excessive secretion, perhaps temporary, into the vitreous chamber, the ways of escape of fluid from the eye not being structurally changed. The drug gave relief by causing contraction of the intra-ocular muscular fibres sufficiently strong to render tense and to open out the meshwork in the neighbourhood of the iris angle. In this way, the retardation caused temporarily there by the increased pressure is done away with, and a sufficient flow re-established. The curative action of the drug was not due to a removal of the iris periphery from the entrance of Fontana's spaces, for it is only in cases of longer standing that the iris is found occupying such a position. Eserine would naturally fail where, as in senile chronic glaucoma, the muscular fibres of the ciliary body and iris were atrophic, and the meshwork at the periphery of the anterior chamber indurated and contracted.

Mr. ANDERSON CRITCHETT had recently had a case of chronic glaucoma in which the persistent use of eserine for some months had entirely failed. He thought too much trust ought not to be placed in eserine.

Dr. ANDREW (Shrewsbury) thought that eserine was of value where sympathetic ophthalmia was commencing. He had found that, in those cases where it was doubtful whether the excision of the diseased eye might be too late to save the other eye, eserine seemed to reduce the tension of the eye sympathetically affected, and gave time for the selection of a favourable moment for excision of the diseased eye.

Mr. PRIESTLEY SMITH had seen two cases in which he thought eserine had been of use in acute glaucoma. He believed that eserine and atropine had no effect on the tension of the healthy eye. Where the angle of the anterior chamber was compressed, eserine reduced the tension. Where the lens came to lie in front of the iris, so that the relations of the anterior chamber were altered, then eserine had an opposite effect, and might even set up an attack of glaucoma.

Mr. McILARDY had found that, in some instances, eserine would, on two or three occasions during the course of a case of recurrent high tension, lead to a reduction of tension, but would on a subsequent occasion, in the same case, fail. He therefore questioned whether it was safe to allow a patient, who was greatly benefited by eserine, to pass beyond the reach of surgical superintendence. In two cases he had seen, the patients had been led by their faith in eserine to put off the operation of iridectomy until too late.

Mr. G. CRITCHETT thought that, though eserine often gave temporary relief, yet frequently the glaucomatous condition returned. He believed that a patient who had had an iridectomy done was in a safer condition than one who trusted to the possible benefit to be derived from eserine.—*Brit. Med. Journ.*, December 17, 1881.

Massage in Diseases of the Eye.

PAGENSTICHER (*Arch. of Ophth.*, Dec. 1881), called attention to this mode of treatment in the *Centralblatt für Augenheilkunde* for December, 1878; he now publishes his further experience of it, which has been very favourable.

Massage consists in rubbing the surface of the eye with the eyelid in a par-

ticular manner. The thumb or forefinger is pressed lightly on the edge of the upper or lower lid, and the lid is rubbed as rapidly as possible over the eye usually in a radiating direction, *i. e.*, from the centre of the cornea towards its margin. The rubbing must be both light and rapid. The massage of any one particular portion of the ciliary region, which is generally all that is required, occupies a minute or two; it is usually practised once a day, but sometimes twice if well borne. Pagenstecher at present always uses the yellow precipitate ointment, made with vaseline, simultaneously with the mechanical treatment; in addition to its specific therapeutical effects, it does good by lubricating the surfaces.

The conditions to which massage is applicable are certain affections of the cornea, conjunctiva, sclera, and ciliary body, *viz.* :—

1. Opacities of the cornea resulting from pannous keratitis, serofulous superficial keratitis, and even parenchymatous keratitis. When, after corneal vascularity has subsided, such opacities remain stationary, massage re-excites a moderate vascularity, and promotes removal of the opacity. The irritation produced must be of moderate degree; it must wholly disappear in half an hour.

2. Chronic pustular conjunctivitis, especially in old people. Forms of chronic conjunctivitis in which there is a hypertrophic thickening of the membrane close to the margin of the cornea, occurring either as an elevated yellowish wall surrounding the cornea, or as one or more thick vascular papules towards which large veins course from the conjunctiva. A form of conjunctivitis, chiefly caused by external irritation, in which the inflammation occurs in a triangle, with its base at the outer, rarely at the inner, margin of the cornea, the membrane being swollen and of a grayish-yellow tinge, and the conjunctival and subconjunctival vessels swollen.

3. Forms of scleritis or episcleritis in which fixed nodules appear in or on the sclera, often accompanied with severe ciliary neuralgia. Constitutional treatment is required in addition to the massage, and the latter is not employed if there be iritis; it appears to hasten the absorption of the nodule. Chronic episcleral inflammation, without iritis, leading after long periods to alterations in the tissue of the sclera.

4. Circumscribed affections of the ciliary body. In the one case thus treated a localized congestion of long standing in the upper part of the ciliary region, associated with extreme sensitiveness and pain after efforts of accommodation, was cured by massage.

Speaking generally, Pagenstecher recommends this treatment in chronic inflammatory processes in the anterior segment of the eye. It is contraindicated when it is found to cause permanent or excessive injection, and especially if there be photophobia and lachrymation. It is not to be employed in presence of iritis. —*Ophth. Review*, Feb. 1882.

Rules for the use of Eserine and Atropine in Glaucoma.

Mr. PRIESTLEY SMITH gives the following rules to govern the use of these drugs in primary and secondary glaucoma:—

1. Eserine is not to be regarded as a specific remedy for increased tension in general; but as a means of combating the particular displacement of the iris, which, in a large class of cases, is the immediate cause of the excess of tension.

2. Atropine is to be regarded as inadmissible only in those cases in which dilatation of the pupil is likely to intensify the effect of the above-named displacement of the iris.

3. *Primary Glaucoma.*—In primary glaucoma, and particularly in its early stages, atropine and all other dilators of the pupil are to be studiously avoided.

4. Every case of primary glaucoma should be treated in the first instance tentatively with eserine; the eye should be re-examined within 24 hours, and, if the case be acute and severe, within a much shorter time, in order that operation may be at once undertaken if the tension remain unrelieved.

5. When eserine produces a full contraction of the pupil, it usually produces a reduction of tension and an improvement of vision, and, in exceptional cases, it effects a cure.

6. Eserine is usually to be regarded rather as a means of giving temporary relief and of placing the eye in a condition favourable for operation than as a means of cure. Even when its beneficial action is most complete, the glaucoma is likely to recur and to become confirmed unless arrested by a timely iridectomy.

7. It is chiefly in very recent subacute or acute attacks that benefit from eserine is to be hoped for.

8. In simple chronic glaucoma contraction of the pupil by eserine may be associated with some reduction of tension, but it is unlikely that the benefit will be great or lasting. If operation be declined, or be deemed inexpedient, the pupil should be kept permanently contracted by eserine, so far as this can be done without causing irritation, in order, if possible, to retard the progress of the disease.

9. The strength of the preparation employed, and the frequency of its application, should, in all cases, be the minimum which is sufficient to contract the pupil and to keep it contracted. A solution stronger than 2 grains to the ounce of water is probably never desirable, and in many cases a much weaker solution is to be preferred. The gelatine disks of Savory & Moore are a very convenient and trustworthy form of application.

10. When eserine proves powerless to contract the pupil, it will not reduce the tension or do good in any way, but, on the contrary, is likely to do harm by promoting hyperæmia, and should not be used further.

11. The period most favourable for operation is that during which the pupil still responds to eserine, but, in recent cases especially, iridectomy may still prove effectual after contractility of the pupil is lost.

12. As a preliminary and as a sequel to sclerotomy, contraction of the pupil by eserine is almost a *sine qua non*. As a preliminary to iridectomy it is advantageous in so far as it reduces the tension of the eye, but it has the disadvantage of increasing the hemorrhage from the iris. After iridectomy, while the anterior chamber is still empty or only partially reformed, eserine is apt to promote the formation of posterior synechia, and has been known to induce a fresh glaucomatous attack;¹ atropine, on the other hand, is certainly sometimes beneficial. Further evidence as to this point is wanted.

13. In those cases in which a condition closely resembling primary glaucoma is lighted up by an *intra-ocular hemorrhage*, eserine must be used with great caution. It sometimes relieves, but it has been known to excite fresh hemorrhage.

14. *Secondary Glaucoma*.—In secondary glaucoma associated with *posterior or anterior synechia*, eserine is likely to do harm rather than good; atropine may be useful in subduing inflammation, and is likely, if it influence the tension at all, to influence it beneficially. The same rule holds good for serous iritis, and, probably, for some other ill-defined inflammatory states in which the anterior chamber is deep rather than shallow.

15. Glaucoma following *needle operations on the lens* might possibly, in the absence of iritis, be relieved, for the moment, by eserine; but eserine is contra-indicated by the danger of setting up iritis; the speedy removal of the swollen lens is the rational treatment.

¹ Pflüger.—Augenlinik der Universität Bern. Bericht über das Jahr 1880, p. 44.

16. Glaucoma due to the presence of the *lens in the anterior chamber* is likely to be aggravated by eserine; if, when there is no excess of tension, eserine be employed in order to facilitate the removal of the dislocated lens by operation, it should be applied only a short time before the operation is performed, lest it should induce a glaucomatous attack in the interval.—*Ophthalmic Review*, March, 1882.

Treatment of Otorrhœa.

Professor GRUBER (*Allgem. Wiener Med. Zeitung*, 1880, Nos. 28, 29, 30) discusses three methods now in vogue, viz.: 1. Schwartz's treatment with strong solutions of nitrate of silver; 2. The method of treatment with spiritus vini rectificatus simus; and 3. Bezold's powdered boracic acid treatment; all or which the author has used with great benefit. The first plan of treatment he finds best in cases of extensive perforation, in which the tympanic mucous membrane is largely exposed. To avoid cauterizing the Eustachian tube and throat unnecessarily, he introduces the caustic solution by means of a syringe, whilst the patient's head is resting on the opposite side of his occiput. The nitrate of silver is then neutralized by the injection of a warm solution of common salt. The strength of the caustic solution employed is 15 to 40 grains to the ounce. The effect of this treatment is usually rapid; and if four or five cauterizations fail or their effect, the author discontinues them. He has compared the action of boracic acid and of borax. He finds the latter, in concentrated solution, more effectual in otorrhœa as a symptom of "chronic middle-ear catarrh accompanied by destruction of the drum-head," than the powdered boracic acid; in chronic suppurative inflammation of the middle ear, on the other hand, in which there is destruction of the membrane when the patient comes under treatment, the boracic acid often renders very good service, but it must be continued for several weeks after the discharge has ceased, or relapse may occur. In cases of this description in which there are no polypoid growths, the author almost always employs first the boracic acid treatment, and only in the event of this failing does he have recourse to other methods.—*London Med. Record*, Dec. 1881.

MIDWIFERY AND GYNÆCOLOGY.

Experimental Production of Abdominal Pregnancy.

Dr. LEOPOLD, of Leipzig, has recently carried out some experiments of the above kind, the results of which we think it well to summarize. The most obvious method of investigating the process of abdominal gestation would of course be to open the abdomen of a pregnant animal, cut into the uterus, and turn the embryo out into the peritoneal cavity. But this has the disadvantage that the operation on the uterus would be attended with some degree of shock, and probably ulterior ill consequences, which would interfere with a favourable result from the experiment. Dr. Leopold therefore proceeded thus: he opened the abdomen and uterus of a pregnant animal, and then the abdomen of one not pregnant, and transferred in some experiments the embryo only, in others the embryo and its membranes and placenta, from the uterus of one animal to the abdominal cavity of the other. Then he closed the wound, and observed the result. Rabbits were the animals used. Embryos, two and a half, five, six, and eight centimetres long, were transplanted—those of the last-mentioned dimension being as near

maturity as could be obtained. We cannot quote the experiments in detail (an account of them is given in the *Archiv für Gynäkologie*); the lessons which they teach are, of course, the important part. As to result, the experiments fall into two groups—one in which peritonitis followed, from which the animals soon died; and the other in which they survived, and the transplanted embryo became encapsuled. In the cases in which peritonitis was excited, the fœtus was found to have undergone rapid disintegration. Of the very smallest embryo transplanted, no trace was found when the animal died on the second day. Of those which were older, only some nodules of bone and cartilage remained, the soft parts having been absorbed through the agency of invading leucocytes. In the cases in which no peritonitis was excited, the animals were killed at periods varying from three to seventy days after the operation. The changes found, speaking generally, were that the fœtus had become encapsuled; that the very early embryos were completely absorbed, not a trace of them being left. In the older embryos, the soft parts were more or less completely absorbed, the skeleton was left, and there was *growth* of bone and cartilage. In the latter result these experiments may usefully be compared with others published by the same author in Virchow's *Archiv*, in which he showed that bits of cartilage from young animals, when transplanted into the anterior chamber of the eye, were absorbed, while bits of cartilage from fœtuses *grew*, and formed tumours. The chief practical conclusion which Dr. Leopold draws from his experiments is, that they make it seem probable that cases of extra-uterine gestation, ending in rupture of the sac and escape of the fœtus into the abdominal cavity, may be much commoner than is thought, the symptoms being those of a pelvic hæmatocele, and the case ending in the death of the fœtus and its absorption through the action of leucocytes.—*Med. Times and Gaz.*, Jan. 14, 1882.

Treatment of Spasmodic Dysmenorrhœa and Sterility by Dilatation of the Cervical Canal with Graduated Metallic Bougies.

At a recent meeting of the Obstetrical Society of London Dr. Godson gave a history of the introduction of the method, more than fifty years ago, by Dr. Mackintosh of Edinburgh, and of the various phases through which it had passed, it having fallen into disfavour, until recently its claims had been advocated by Dr. Matthews Duncan. A statement was made of all the cases of dysmenorrhœa associated with sterility which the author had treated, pregnancy having followed in five, or one-half of them. The dysmenorrhœa was of that kind known as spasmodic or obstructive, characterized by severe colicky pains in the hypogastric and sacral regions, either before the menstrual flow or coincident with it. The author preferred to drop the title obstructive, as he knew no evidence to prove that there was a want of patency of the cervical canal; and Dr. Duncan had passed a probe into the uterus at the height of the pain without meeting with obstruction. He believed that the spasm of the uterine muscular tissue was of itself sufficient to give rise to the severe pain, without any obstruction. Case 1, aged 32, married four years, applied on account of sterility; its association with dysmenorrhœa was then elicited. On two occasions, at an interval of two months, several dilators were passed, the highest No. 14. The dysmenorrhœa was relieved after the first menstruation; pregnancy occurred three months after the second. Case 2, aged 29, married three years, sterile, applied for severe dysmenorrhœa. Two dilators only (Nos. 7 and 8) were passed, producing very severe pain. The next period took place without pain, and was followed by pregnancy. Case 3, aged 22, married two years, complained of spasmodic dysmenorrhœa. Dilators 7 and 8 were passed; three periods comparatively free from pain followed, then pregnancy.

Case 4, aged 24, sterile, married two years and a half, applied for severe dysmenorrhœa, aggravated by marriage. Bougies Nos. 7 and 8 were passed only a few days before a period, which, when it occurred, was in no respect free from pain. Two periods followed with hardly any pain, and then pregnancy. Case 5, aged 25, married three years and a half, sterile, applied for dysmenorrhœa. Dilators 6, 7, 8, 10, and 12 were passed. One period occurred without pain, and then pregnancy. The author concluded: 1. That the method was simpler and safer than any other proposed; 2. That the dilatation might be performed with safety at the house of the consultant; 3. That a very small amount of dilatation was necessary; 4. That the operation should be performed within a week or ten days after a period; 5. That it should be done, not on successive days, as hitherto recommended, but all at once; that the first bougie should be a small one; and that there should not be sufficient difference between the size of successive bougies to cause a splitting of the mucous membrane; 6. That pregnancy appeared to occur on account of the dilatation having cured the conditions on which the dysmenorrhœa depended. In none of his cases was there either stenosis or constriction of the canal by acute flexion. The theory, therefore, of permanent constriction being discarded, in what did the impediment lie? Was it a spasmodic constriction causing ejection of the semen? Of the five cases in which the sterility was not cured, one—a hospital case—was lost sight of; one was relieved of her dysmenorrhœa for a time; but, it having returned again as badly as ever, was treated by an intrauterine stem, and cured. Of the remaining three, in all was the dysmenorrhœa relieved; but pregnancy had not yet resulted.

Dr. GRAILY HEWITT had found that, in the large majority of cases, relief of dysmenorrhœa was obtained by simply maintaining the canal of the uterus in a state of straightness. In cases where the uterus was unduly soft and pliable, dilatation was not necessary; but in long-standing cases, dilatation was a great assistance in the treatment. He had used a two-bladed dilator acting on the principle of a glove-stretcher. This instrument produced the same kind of effect as the dilators now exhibited. He had cured many cases of sterility, some of ten, or even thirteen years' standing, by the above treatment. In regard to diagnosis, cases of very soft flexed uterus were sometimes overlooked, owing to the apparently easy passage of the sound.

Dr. HEYWOOD SMITH said that the author had referred to the President's experiments on the flow of fluid through bent tubes; but the substances used in such experiments had no analogy to the uterine canal, which was of varying thickness, and of such a substance as rendered its canal obnoxious to impressions upon its inner surface from any flexion. His father, when assistant-lecturer to Dr. Rigby at St. Bartholomew's in 1836, had used Mackintosh's bougies for the treatment of dysmenorrhœa and sterility; and, since the foundation of the Hospital for Women that procedure had been practised with the greatest possible advantage. He thought it best to have the sounds straight in their uterine portion, not curved, like the dilators shown.

Dr. CARTER had obtained exceedingly satisfactory results from the use of graduated sounds, both as regards dysmenorrhœa, and sterility when it accompanied it. When the flabby condition of uterus mentioned by Dr. Hewitt existed, he found that dilatation alone was not sufficient; and in such cases he had employed an intra-uterine stem with the best results. He had found it better not to pass the sounds within four or five days.

Dr. ROUTH said that he did not see what advantage the method had over that of dilatation, first by tangle-tents, and afterwards the employment of an intra-uterine pessary. A plan analogous to Dr. Duncan's had been in use in early days at the Samaritan Hospital; but it had been proved that it was not so free from

danger as stated to-night, and it had been abandoned. When such men as Sir James Simpson and Dr. Marion Sims had discarded the dilators because of their danger, clearly they should not be lightly resumed. The effect was transitory, unless pregnancy occurred very soon after; and the pain induced was sometimes very great. In the case of flexion, it was often difficult to pass even a bent sound; and the use of a straight dilator in such cases would be liable to set up inflammation. With either Dr. Wynn Williams's pessary or his own, a uterus was not only kept dilated, but it reduced the uterus. The comfort of such instruments was such, that women did not like to part with them; but he always removed them after eight or twelve months; and pregnancy frequently followed.—*British Medical Journal*, Jan. 7, 1882.

Dr. RODGENS had twenty-five years ago commenced the use of dilators, at the recommendation of the late Sir James Simpson. In married women pregnancy often followed; but the results were not so satisfactory in the unmarried, who often relapsed into their former condition. Eventually he ceased to have confidence in their use, and he believed that they had been universally discontinued in London, until the last few years. He had also given up the use of incisions, one of his patients having died after that operation. Eventually he turned his attention to the cure of dysmenorrhœa by the use of Dr. Wynn Williams's intra-uterine stem and shield; and in only one case had serious mischief arisen. In private practice, however, he preferred one of Meadows' or Routh's stems of vulcanite, as India-rubber soon decomposed. Since hearing the paper he had tried a No. 7 and 8 dilator upon one patient, but found that the latter gave extreme pain. Dilatation by sea-tangle was well borne.

Dr. BRAXTON HICKS confessed to a difficulty he had always felt in distinguishing the purely spasmodic dysmenorrhœa, to which the author professed to confine his paper. We might be able during the menstrual intervals to pass a sound readily up the fundus, and yet the menses might be obstructed; for instance, from a hemorrhagic coagulum or tumidity of the mucous membrane. When we looked to the remedy employed by the author, we found that it was essentially dilatation by bougies graduated in size. Hence we might fairly conclude that the cases where these were of use were, more or less, at the menstrual period cases of obstruction, unless it were argued that the mere passage of the metal tended to harden the mucous surface and to render the uterus less susceptible and spasmodic. If, then, the cases were in a measure those of obstruction, then they were out of the discussion, which was limited to those of pure spasm.

Dr. SAVAGE said that the instrumentalists contended that their inventions cured in some cases, relieved in most, and never did harm; whereas there was abundant evidence that they never cured, relieved only so long as they were used, and too often did much harm, even to compromising life. An eminent provincial surgeon had lately brought to the notice of the profession fourteen morbid specimens of the uterine appendages, some of the tubes containing half a pint of matter. It was said that these unfortunate subjects had been the round of the profession, and had been subjected to all sorts of instrumental treatment. Was it not clear that the original disease, if not produced by instrumentation, had been greatly aggravated by it? He agreed with Dr. Hicks and Dr. Herman that every sort of uterine deviation and contraction was met with without suffering; and the converse. He thought the diagnosis of deviations by instruments untrustworthy, for the deviation supposed to be diagnosed was actually produced by the instrument. He deprecated the fast-growing tendency to interfere surgically with complaints referable to the uterine system.

Dr. PRIESTLEY thought that one of the disadvantages of discussions like the present was that those of limited experience were apt to conclude that all cases

of dysmenorrhœa required local treatment. The theory that dysmenorrhœa was always obstructive was not borne out by facts, for severe pain in menstruation often occurred after the genital canal had been fully expanded by parturition; though it was true that, in the majority of cases, parturition cured previously existing dysmenorrhœa. There might be great suffering at what corresponded to menstrual periods where there was absolute amenorrhœa, or where the uterus was rudimentary. There was a large class of cases, more especially among unmarried girls, in which local treatment was absolutely unnecessary. He could not agree with the author, however, in dropping the term obstructive dysmenorrhœa, for there were not infrequent instances of genuine organic narrowing, congenital, or acquired as the sequel of inflammation. A correct diagnosis was most important. Where local treatment was considered necessary, he thought in some cases dilating was the proper course, in others division of the cervix was more useful. Where there was a choice he preferred dilatation, considering incision to be much more hazardous.

Dr. GALABIN said that the most remarkable point about the cases was the very large proportion of them in which not only dysmenorrhœa, but sterility seemed to have been cured. What was the mechanism of this cure? He had himself had cases in which, after years of sterile marriage, pregnancy had followed within a month after a single use of metallic bougies or Priestley's dilator. Dr. Barnes had related cures of sterility by moderate incisions of the external os, and similar experience was not uncommon. The only common element in the three modes of treatment seemed to be that all made the access through the cervical canal more free. The natural inference was that a canal, though large enough to let the sound pass easily, might yet practically not give free enough ingress to the semen. *A fortiori* a similar canal might not give perfectly free egress to the product of menstruation, which was not only fluid blood, but contained débris, if not shreds, of mucous membrane, and often clots. Egress of menstrual fluid was not prevented, as ingress of semen appeared to be, because it had the contractile power of the uterus behind it; but this very circumstance was enough to account for spasmodic pain in a sensitive subject. He did not accept the author's theory that the sterility was due to spasm of the uterus ejecting the semen, for the painful spasm only occurred at the menstrual period.

Dr. MURRAY spoke in favour of the intra-uterine stem. The case of dysmenorrhœa and sterility so treated by him had been successful; and he thought the stem pessary much more likely to effect a cure in the so-called spasmodic dysmenorrhœa. He quite agreed with Dr. Hicks's views on this subject, and also with Dr. Priestley, that a great deal too much interference often took place.

Dr. AVELING said that dilatation for the cure of dysmenorrhœa might be effected in four ways: 1, by passive, or what had also been called physiological, dilatation by means of stems; 2, by wedging the canal open by sounds, bougies, or plugs; 3, by direct dilatation instruments or tents being passed into the canal and expanded or allowed to expand; 4, by incision. Each of these methods he thought might be used satisfactorily, but no one should be used to the exclusion of the other.

The President, Dr. MATTHEWS DUNCAN, thought the mechanical obstruction to semen by the cervical passage was regarded as far more important than it really was; and especially he noted the error of regarding the dimensions of the cervical passage as being stable, constant, or permanent. He had no doubt they varied, and almost certainly were enlarged during the orgasm of coitus. Were these conditions as important as represented, and were they stable or constant, impregnation could never occur, for the passage of the inner end of the tube was closed altogether; not a bristle could be passed. This was enough to show that it

was wrong to consider the size of passage without further investigation as to changes of the size. Many eminent men doubted the reality of so-called cures of sterility, and he had no doubt that most cases were mere lucky coincidences. He was not convinced of the reality of any cures except in these cases of combined dysmenorrhœa and sterility discussed in Dr. Godson's paper. One evidence in favour of the reality of the cures was that all were done by substantially the same method—namely, dilatation of the cervix. Among the various means of dilatation, he held a well-known opinion in favour of that recommended in the paper just read.

Dr. Godson, in reply, said that his dilators were not curved any more than an ordinary uterine sound, and not so much as those used by the president. It seemed almost certain that the patient upon whom Dr. Rogers had passed the dilators was suffering from congestive dysmenorrhœa, and was not a fit subject for the treatment. It was most important that a proper diagnosis should be first arrived at, and that dilatation should be only practised where there was absence of congestion, otherwise there was great fear of inflammatory mischief ensuing. His paper treated only of spasmodic dysmenorrhœa associated with sterility, and therefore Dr. Priestley's remarks with respect to the treatment of young girls were outside the scope of the paper, but he entirely accorded with them.—*Lancet*, February 11, 1882.

The Elastic Ligature in the Abdominal Extirpation of Uterine Fibroids.

One of the chief difficulties in the extirpation by laparotomy of uterine fibroids has been to find some trustworthy method of securing the stump. The pedicle, being formed of muscular tissue, contracts, so that the clamp or ligature, a few hours after it has been applied, will have become loose. In a recent number of the *Archiv für Gynäkologie* a case is recorded in which the elastic ligature was successfully employed. It occurred in the clinique of Professor Olshausen, and is reported by Dr. E. Schwarz. The tumour, before operation, was supposed to be ovarian; its smoothness, the sense of pseudo-fluctuation which was felt over it, and the facts that it pressed down the uterus (which could thus be palpated per vaginam apparently throughout its whole length) and that a rounded elastic segment of the tumour could be felt behind the uterus, being the features which led to this error. An incision having been made, and the tumour exposed, a trocar was thrust into it, but nothing escaped. The opening was then enlarged with the knife, and a quantity of opaque, reddish-brown, thin fluid, and a mass of decolorized blood-clot as big as two fists (in all, weighing about thirty pounds) was removed. The incision having been prolonged upwards, and thus the bulk of the tumour (which was found to grow from the upper and posterior part of the uterus) got outside of the abdomen, a piece of India-rubber drainage-tube was made fast round its pedicle to control hemorrhage. Then the tumour, the solid part of which weighed twelve pounds and a half, was excised, the pedicle being left of a funnel shape; the arteries visible were separately taken up and tied, and the sides of the hollowed-out pedicle were brought together by superficial and deep sutures. The India-rubber tubing was then taken off; but blood welled up from the pedicle in such quantity as to call for some mode of stopping it which would not involve delay. A piece of India-rubber tubing about the thickness of a goose-quill was therefore put twice round the pedicle and tied. Between the two bands of tubing the stump was transfixed with a long needle, and it was then made fast to the abdominal walls, drainage-tubes were inserted, and antiseptic dressings applied. The part outside the ligature was nearly as big as the fist. The operation lasted one hour and three-quarters. In the evening the dressings were found soaked through, and on removing them, it was discovered that the

needle had broken, and the stump dropped into the abdominal cavity. The ends of the elastic ligatures were still outside. As there were no bad symptoms, it was not thought necessary to interfere further. The drainage-tubes were removed on the fourth day. The elastic ligature and the detached part of the pedicle came away on the seventeenth day. The patient did well. Dr. Schwarz suggests some ingenious modifications in the mode of applying the elastic ligature; and Professor Olshausen (who adds some comments) expresses himself as without doubt that the elastic ligature is destined to play a large part in the treatment of cases similar to the one described. We may add that a volume of *Beiträge* recently published to commemorate the jubilee of Professor Credé's occupation of his chair, contains a communication by Dr. Leopold, of Leipzig, bearing on the same subject.—*Med. Times and Gaz.*, Dec. 17, 1881.

Diagnosis of Ovarian Tumours.

Dr. A. MACDONALD mentions the following points as assistance in the differential diagnosis of ovarian tumours:—

1. *Pregnancy*.—The possibility of pregnancy, the signs and symptoms of pregnancy, and waiting if in doubt, place the diagnosis beyond possible mistake with a fair measure of care.

2. *Fibroid*.—A large fibroid with solid walls, leading to general enlargement of the uterus, is easily diagnosed. The increased length which the sound enters, the fact that the uterus moves with the sound, the peculiar feel of the uterus, and the nearly constant menorrhagia, suffice to keep the diagnosis correct. It is quite common to hear a bruit in a case of uterine fibroid; only in vascular sarcomata is such audible if the tumour is ovarian. But much greater difficulty is experienced in cases of fibro-cystic tumours connected to the uterus with or without pedicle. In that case we must try to ascertain whether the tumour is connected or disconnected with the uterus. Then the cyst of a fibro-cystic tumour may be tapped, when we expect to find only a thin fluid of great density, with some blood-corpuscles, and possibly some non-striped muscular fibres. But in those cases it is often found that only an exploratory incision can determine the diagnosis with accuracy.

3. *Renal cysts* begin below the false ribs and extend downwards and forwards. They have a line of resonance between them and the liver due to the transverse colon, which is of value as showing they are not of hepatic origin, and when aspirated they contain urea. Usually accompanying such there are urinary symptoms, but not always.

4. *Ascites* exhibits the characters of free motion of fluid in an imperfectly filled cavity. Accordingly, when the patient lies on her back the abdomen is flattened anteriorly, the flanks give a dull note, and there is clearness round and above the umbilicus. With change of the patient's position the areas of resonance alter. Thus if the patient is turned on her left side, the right flank gives a clear note, and *vice versa*. In case of tapping an ascites the thick gelatinous fluid characteristic of ovarian tumour is never obtained.

5. *Hydatid Cyst of the Liver*.—In this case the tumour grows from the liver, distending first the distance between the ensiform cartilage and the umbilicus, the reverse of an ovarian cyst. Again tapping and discovering accephalocysts in the fluid is convincing evidence of the true nature of the tumour.

6. *Hysterical abdominal distension*, commonly known as spurious pregnancy, need deceive no one, as the percussion is uniformly resonant, and the tumour disappears under chloroform.—*Edinburgh Med. Journ.*, Nov. 1881.

Hernia of the Ovary.

At the meeting of the Royal Medical and Chirurgical Society, held Jan. 24, Dr. ROBERT BARNES read a paper on "Hernia of the Ovary," giving an abstract of cases hitherto reported, and relating two cases observed by himself. The first case was admitted by him into St. George's Hospital in 1877. The patient was single, aged forty-one, and had always enjoyed good health. At twenty-four she sustained a rupture in the left groin, and wore a truss; at thirty-eight she observed a second swelling behind the first. The swelling and tenderness of the ovary were observed before and during the menstrual periods. Corresponding sphygmographic observations showed distinct rise of tension preceding the flow and subsiding when the flow set in. The ovary was removed; a description and illustration of it were submitted by Dr. Goodhart. He referred to Dr. Chambers's case in the *Obstetrical Transactions* in which bodies simulating ovaries turned out to be testicles. He discussed the etiology of hernia of the ovary and uterus, citing Cruveilhier's views, and referred to the frequent complication of anomalies of development of the genital organs in association with hernia of the ovary, also with extra-uterine gestation. He enumerated the varieties of hernia of the ovary; referred to the supposed greater frequency of inguinal hernia, when the ovary is concerned; to the greater frequency of congenital hernia; the complications with intestine and epiploon; the dependence of hernia of the uterus upon pre-existing hernia of the ovary, citing Cruveilhier's theory and the confirmatory conclusions of Puech, Deneux, and Cesar Hawkins. The author then discussed physiological points, illustrated by the observation of the herniated ovary; how the ovary swells concurrently with increased tension of the vascular system before menstruation; how the round ligaments swell. He described the order in which the phenomena of menstruation occur, arguing that the ovarian nixus is the *primum mobile*, that nervous and vascular tension follow, and lastly, the menstrual flow, resting greatly upon sphygmographic observations. He suggested that the recent practice of oöphorectomy on Battey's principle will supply opportunities for deciding this and other questions, and proposed that sphygmographic observations should be made upon the subjects of this operation. He then discussed the diagnosis and treatment of hernia of the ovary, contending that it furnishes a legitimate motive for Battey's operation *quoad* this affection at least.

Dr. ROUTH said the facts related left little doubt that menstruation starts in the ovary. He mentioned the case of a young unmarried lady with a prolapsed ovary in Douglas's pouch on left side; it was adherent, and pressure produced distressing sexual excitement. He had always noticed that pressure on the prolapsed ovary produces great sickness. This was pointed out as diagnostic by Dr. Greenhalgh. Had Dr. Barnes met with either of these symptoms in his cases?

Mr. HULKE supposed there were but few engaged in hospital practice who had not met with such cases. Of course, in the absence of dissection, precise diagnosis must be difficult. In 1871 many cases were recorded by Englisch—viz., thirty-eight cases of external hernia of the ovary; of these as many as twenty-seven were cases of inguinal hernia, and ten or twelve of them were double, and where double it was almost always congenital. It is possible that in the case operated on by Mr. Pollock the process of peritonæum, etc., was obliterated by the previous pressure of the truss. When the hernia is congenital it is accompanied by the Fallopian tube. In the greater number of instances there is a persistent patent process of peritonæum, so that there is a risk of peritonitis following removal. Each case must be adjudged on its own merits, as regards operation. He had seen cases where the pressure of a truss could be borne, others where it produced great misery. The influence of menstruation was well marked in a

case under Mr. G. Lawson's care some years ago; the suffering was so great that the patient begged for the removal of the ovary, which was done by Mr. Lawson.

Mr. LANGTON said there was always a difficulty in deciding whether the swelling is an ovary or not; for even in Dr. Chambers's case, the true nature of the gland (it was found to be testicle) was only discovered by microscopical examination. His own experience of twenty years at the Truss Society showed him that there were a number of movable tumours in adults and infants which were doubtless ovaries. In the last nine years at the Truss Society there had been 4084 cases of inguinal hernia, 589 congenital, the rest acquired; no less than 67 were instances of these tumours, all of which were inguinal, with one doubtful exception (? femoral). Of these 67, 42 were congenital, and 25 acquired. The number of irreducible congenital cases was 13; and of the 29 irreducible, all but 2 were afterwards reduced. This was contrary to English's statistics (New Sydenham Society's Biennial Retrospect, p. 291, 1871-72). Of the 25 non-congenital cases, 8 were reducible and 17 irreducible; which also was at variance with English's statement. In the congenital cases, all but 2 were double. The effects with regard to the menstrual period varied very much; in some they swelled materially with fluid, which, on receding, left the ovary the size of a walnut. In those cases not influenced by menstruation, the prolapse probably takes place early, so that the ovary is ill-developed. In the 4 or 5 where there was periodic excitement a hollow pad gave comfort, and in all others the application of a truss behind the ovary prevented the intrusion of any epiplocele or enterocele. In congenital hernia of the ovary—if on the right side—five per cent. were irreducible; if on the left, twice that proportion: a ratio which holds also for adult cases, and is similar to the same condition of the testis.

Dr. HEYWOOD SMITH thought Dr. Routh's observation of interest, for it is very rare to have a sensation of sexual excitement such as that described by Dr. Routh in his case; and perhaps it had some relation to the adhesions there present involving branches of the pudic nerve.

Dr. BARNES, in reply, said that most of the observations made were supplementary to his paper. Mr. Lawson's case was related in detail in the paper. The remarks of Messrs. Hulke and Langton supported the observations set forth by Cruveilhier, whose accuracy in all matters Dr. Barnes had often confirmed. Cruveilhier says that these cases are mostly congenital; more on the left than right side, and more often inguinal than otherwise. Dr. Barnes had not himself seen distinct evidence of sexual excitement, as described by Dr. Routh; as a rule, pressure produces mere pain. There is one case well known to obstetric physicians, where the ovaries swell enormously at every menstrual epoch to the size of a Tangerine orange, and then subside. Pressure on an ovary prolapsed in Douglas's pouch produces much pain. At present he has a case in hospital where the organ is probably diseased. The frequency of left-sided prolapse was probably due to the greater length and laxity of the left round ligament, and the greater depth of Douglas's pouch on the left than on the right side. This difference between the two sides accounted for other pathological phenomena—*e. g.*, hæmatocele is almost invariably left-sided—and may also explain the more frequent occurrence of adhesions in connection with the shorter right ligament. Ovarian hernia seemed to be more frequent than he had imagined, and instances come largely under the observation of surgeons, especially of those who see much of hernia generally. It was a field for physiological research, and also for surgical study. He thought that when there was pain and distress, it was better to remove the organ, which was liable to become inflamed and diseased, whilst trusses were apt to cause distress. In Mr. Lawson's case, the previous pressure of a truss had probably caused adhesions obliterating the process of peritoneum.—*Lancet*, Jan. 28, 1882.

Case of Double Oöphorectomy.

Dr. DE ZOUCHE records (*Australian Med. Journal*, April 15, 1881) the interesting case of a lady, aged 30, who had been well until her confinement. After the lying-in was at an end, severe ovarian pain appeared. The pain so increased in severity that, in spite of all remedies, it became intolerable. For days she could take no sustenance, except a cup of tea. She seldom slept a whole hour at one time. Sometimes she would be unable to stand, at other times she would roll about the floor in pain. She had not been twenty yards from the house since her confinement, as walking caused her much pain. Dr. de Zouche, therefore, performed oöphorectomy by the abdominal section. Immediately after the operation both ovaries were weighed. The left weighed 120 grains, the right 113 grains. Both contained a number of cysts about the size of a pea. On cutting into one of these, a clear watery fluid spouted out. Carbolic precautions were used. On the twenty-ninth day she was able to sit in the garden. The patient has been able to eat and sleep well since the operation. The improvement has been decided, and the patient is glad the operation has been done.—*London Med. Record*, Oct. 15, 1881.

Method of Exploring the Ureters in Women.

Dr. PAWLICK describes in the *Centralblatt für Gynäkologie*, Oct. 15, 1881, a new method of exploring the ureters in women, by which anything of the nature of a preliminary operation, even dilatation of the urethra, is avoided. For it is simply into the vagina, not into the bladder, that the guiding finger is inserted. He has discovered, he says, that there are two furrows on the anterior wall of the vagina, which, starting from a common point situated a short distance behind the bulge of the urethra, diverge at an obtuse angle, and pass backward and outward. Near the cervix uteri they are connected by a transverse furrow, thus forming a triangle that corresponds with the trigone. The direction of each lateral furrow is coincident with that of the ureter of the same side, and the intersection of the lateral with the transverse furrow is nearly at the situation of the mouth of the ureter. Hence, after introducing the sound into the bladder (the patient being in the knee-chest posture, with the perineum retracted, so as to expose the parts to view), its point need only be guided slightly with the finger in the vagina. The instrument, it is said, is easily made to enter the ureter in this way, and thus in removing the uterus it is easy to avoid injury of the ureter.—*N. Y. Med. Journ. and Obstet. Rev.*, Jan. 1882.

"Navel-ill" in Children.

It is well known to obstetric practitioners that there is met with sometimes in new-born children an affection of the navel which appears to lead to pyæmia. Some years ago Mr. Jonathan Hutchinson communicated to the Obstetrical Society of London an account of a similar disease occurring in lambs. In those which he had dissected he found purulent inflammation of the umbilical veins, with pyæmic abscesses in the liver, and in some peritonitis, pleuritis, pneumonia, and joint-affection also occurred. In the following year Dr. George Roper brought before the same society two cases of umbilical phlebitis with pyæmia. Both the cases had occurred in the practice of the same medical man, and the mother of one of the children had died from pyæmia. His paper contained a reference to the work of Dr. Hasse (published by the Sydenham Society), in which that author had collected ten cases of a similar affection. Dr. Arthur Edis, on the same occasion, brought forward a case which he had met with, in

which an identical form of disease led to the death of the child. These are almost the only accounts of the subject in our literature.

A recent paper by Dr. MAX RUNGE, of Berlin,¹ contains an interesting account of a larger number of cases than either of the authors above referred to was able to collect. In the Strasburg Lying-in Charity, during the summer of 1876, five cases of navel affection occurred out of 120 deliveries. There were no cases of puerperal fever. In the summer of 1879 an epidemic of puerperal fever appeared, many women dying; but there was no disease among the children. From March to June, 1880, the health of the mothers was exceedingly good; but twenty-six infants suffered from navel affection, sixteen of whom died. Dr. Runge has altogether seen forty-five cases, in twenty-four of which a careful post-mortem examination was made. In every one of the cases he found inflammation of the umbilical arteries, the umbilical vein being healthy. In eight cases this was the only morbid condition present. In one there was syphilitic disease in lungs, supra-renal capsules, and epiphyseal cartilages. Twice cerebral hemorrhages were present, in one accompanied with gangrene of the scalp from pressure with forceps, and in one with gonorrhœal ophthalmia. In fourteen cases there were morbid changes present which were undoubtedly connected with the umbilical affection. In five, pneumonia or pleurisy were the only affections which occurred; in four others they existed along with other changes; and in one (the syphilitic one above mentioned) there was peritonitis. In two there was jaundice, in two erysipelas, in three hypertrophy of the spleen, and in one infarctions of micrococci in that organ.

Dr. Runge draws the following conclusion from his cases: Inflammation of the umbilical arteries is not in all cases a local disease tending to recovery. It may, *per se*, cause death, and it may lead to pyæmia. In the cases in which pyæmia occurred (except the one with gangrene of the scalp) there was no channel except the umbilicus through which the infective poison could have entered the circulation. He believes that the process begins in the connective tissue around the arteries, and then extends to the vessel itself, producing thrombosis and the subsequent changes seen. The precise time at which the morbid process began could not be ascertained. None of the children died during the first three days, three died on the fourth day, eleven between the fifth and eighth days, and ten on or after the ninth day.

He then considers the etiology of the disease. It has been supposed that the infection was derived from disease in the mother. This is negatived in Dr. Runge's cases by the fact that, with the exception of one that died from eclampsia, one that had cystitis, and another in whom there was metritis, all the mothers were well.

The diagnosis is exceedingly obscure. In many of Dr. Runge's cases its existence was not suspected during life. That pus can be squeezed from the umbilicus has been stated to be a sign of this disease; but our author finds that this is only seldom the case with arteritis, and that it occurs in other conditions, so that it is not to be relied on. It has been said that jaundice occurs with umbilical phlebitis, but not with arteritis: this is shown by Dr. Runge's cases to be erroneous. From the uncertainty of the diagnosis it follows that the prognosis is equally obscure. The death-rate of umbilical disease in the cases observed by our author was about 45 per cent.

Assuming that the disease under consideration arises from septic infection, and that the septic infection gains access to the system through the umbilicus, the most obvious source of such infection is the dead bit of the cord between the

¹ Zeitschrift für Geburtshülfe und Gynäkologie, Bd. vi. Heft 1.

abdominal wall and the ligature. To prevent the disease, therefore, it would seem to be first necessary to insure an aseptic condition of this structure. Dr. Runge has therefore carried out a careful experimental investigation into different methods of dealing with the remnant of the cord after its ligature. He compared the behaviour of different bits of cord under the following conditions: 1. Simply exposed to the air; 2. Inclosed in a glass case, so that evaporation of moisture was prevented; 3. Wrapped in a rag soaked in carbolic oil; 4. Wrapped in a dry rag. He found that Nos. 1 and 4, which were simply kept dry, quickly mummified without smell; No. 2, in which evaporation was prevented, soon stank; No. 3 did not get fetid, but did not shrivel up. From these experiments the best way of dealing with the bit of cord is obvious.

A most important point remains to be mentioned, viz., that, with the prevalence of this navel affection, there were a remarkable number of cases of purulent ophthalmia. What the connection is—whether the eyes were infected from the umbilicus, or *vice versa*—our author is unable to express an opinion.

Another point of interest is, that a striking number of the children who died were premature. This, in fact, seems the chief element in prognosis, for the children at term who were attacked mostly survived.

For the prevention and cure of this malady the chief points seem to be: 1. To keep the bit of cord which remains attached as dry as possible; 2. The greatest care in washing and dressing the child, so that there shall be no possibility of contact between contagious pus or the maternal discharges and the eyes or umbilicus of the child. As an application to the umbilicus, Dr. Runge recommends a powder composed of salicylic acid and starch.—*Med. Times and Gaz.*, Nov. 5, 1881.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

Antidotism.

Dr. KOBERT (*Schmidt's Jahrb.*, Jan. 1881) gives a review of three memoirs of Husemann and others on this subject (*Arch. für Exper. Pathol. u. Pharmacol.*, Band vi. p. 335; Band ix. p. 414; Band x. p. 101). The first of these, by Husemann in collaboration with Krüger, treats of the antagonism of chloral and strychnia. The following are the conclusions arrived at: 1. There is no reciprocal antagonism between strychnia and chloral (in the sense that the action of either poison is annihilated by the other). 2. When toxic doses of strychnia and chloral are given simultaneously, the action of the latter predominates, and the symptoms of depression are observed. 3. There is, however, a unilateral antagonism in this sense, that the animals (rabbits) poisoned with strychnia may be saved by a non-toxic quantity of chloral, but yet sufficient to induce profound sleep. A cure may be effected, even when five or six times the fatal dose of strychnia is given; but beyond this, death supervenes, though this is retarded. 4. Small hypnotic doses of chloral are insufficient to save an animal poisoned by a quantity of strychnia appreciably greater than the fatal dose. 5. Chloral, when employed in sufficient doses, has proved efficacious in the case of men poisoned by strychnia. It is preferable to other counter-poisons, as morphia, Indian hemp, and chloroform, some of which exert their action too tardily; and others, such as curare and potassium bromide, have the defect of leaving the patient conscious, and thus exposed to the moral tortures which assail him. 6. The favourable influence of chloral in acute strychninism cannot be explained by a direct action

upon the parts of the central nervous system which the strychnia has placed in a state of exaggerated excitability. It may be attributed in great part to the lowering by the chloral of the activity of the parts which conduct the excitation to the spinal cord. It thus prevents the too frequent repetition of tetanic spasms, and diminishes the danger of death which they involve. In nearly every case, the duration and intensity of the attacks have been notably diminished. 7. In the treatment of strychnia poisoning by large doses of chloral, a considerable diminution of the frequency of the respiratory movements is constantly observed; on the cessation of such attack, nevertheless the respiration is accelerated. There is thus a diminution of the normal temperature. 8. Death from chloral, either taken internally or subcutaneously injected, is almost always due to arrest of respiration. It is only when the chloral reaches the heart-muscle in sufficiently large quantities, that death results from cardiac paralysis. 9. In acute chloralism, asphyxia supervenes in part from the progressive diminution of the energy of the respiratory centre, partly from œdematous infiltration of the pulmonary parenchyma; and these lesions are always found more or less pronounced at the necropsy of rabbits poisoned by chloral. The slowing and feebleness of the cardiac contractions have only a secondary influence. 10. Strychnia cannot be employed as an antidote for chloral. It neither hinders the progressive paralysis of the respiratory centres, nor the production of pulmonary œdema. Rabbits poisoned with chloral; and to which strychnia was afterwards given in fatal or even in simply toxic quantity, died from diminution of the frequency of respiration, and the period was not abridged. The lesions found on *post-mortem* examination were those produced by chloral. 11. In cold-blooded animals which have been chloralized, strychnia does not prevent enfeeblement of the heart, nor death from paralysis of that organ. 12. Strychnia does not modify the lowering of temperature constantly observed in acute chloralism. 13. Strychnia does not prevent the hæmaturia and albuminuria observed after subcutaneous injections of chloral. 14. Increase of temperature, and of the frequency of the respiratory movements, are favourable prognostics in chloral-poisoning. 15. The causticity of strong solutions of chloral, and the tolerance of some animals for the drug, have led experimenters into error in regarding strychnia as exercising a favourable influence in chloralism. 16. When in chloral poisoning reflex excitability is abolished, strychnia, even when employed in much larger than a fatal dose, cannot restore this excitability. 17. When strychnine and chloral are simultaneously administered, the heart always stops in diastole. In another research, Husemann has demonstrated the inefficaciousness of camphor, oil of cajeput, ammoniacum, and the principal excitants in poisoning by chloral. Atropine gives the best results, but it must be given in repeated doses. In another research, in collaboration with Fliescher and Wehr, the author has shown that chloral is as efficacious in poisoning by brucine and thebaine as in strychninism. He remarks that thebaine not only convulses, but also greatly diminishes sensibility. Chloral acts counter to codeine and calabarine only when given in quantity one-and-a-half times greater than the fatal dose. In poisoning by sal ammoniac, chloral is useful in moderating the convulsions, but it does not prevent death. The salts of barium and strontium, according to present observations, act as convulsant cerebral poisons. Böhm has observed in frogs a great analogy between the symptoms of intoxication by the salts of barium and those of poisoning by picrotoxine and conicine; but rabbits killed by barium chloride have no convulsions till shortly before death, and these are explicable by paralysis of the heart. Chloral, as might be expected, is powerless against barium and strontium; and the same applies to carbolic acid. Besides, it is known that the convulsions produced by this last agent are not of central origin. Husemann has sought to

render chloral more efficacious in strychnia intoxication by combining it with some other antitetanic medicament. In conjunction with Hessler, he has employed first a mixture of chloral and potassium bromide, which has been vaunted by Bivine. This mixture is less efficacious than chloral alone. The bromide alone does not prevent, but only retards the convulsions. Alcohol is not so efficacious as chloral. Since physostigmine is now met with in commerce in a state of purity, and free from convulsant calabarine, it has been demonstrated that it is eminently paralyzing. Rabbits to which an otherwise fatal dose of strychnia is given do not succumb, if they be previously brought well under the influence of physostigmine. Husemann's researches may thus be summarized from a practical point of view. In strychnia-poisoning neither potassium bromide, nor physostigmine, nor alcohol should be employed; chloral should be given un-mixed with other medicaments.—*London Med. Record*, Jan. 15, 1882.

ROSSBACH (*Pflüger's Archiv*, Bd. xxi.) replies to the attack made upon his conclusions by Heidenhain and Luchsinger, that there is no reciprocal antagonism of poisons, a conclusion which has received confirmation at the hands of Husemann, Mariné, and Nawroki. Rossbach, working in conjunction with Anrep, arrives at the following conclusions: 1. In the sudoriparous and salivary apparatus of animals (dogs) two parts are to be taken into account in considering the actions of poisons, such as atropine, pilocarpine, and physostigmine—the nervous apparatus and the cellulo-glandular portion; and these are in the same relation as the terminal motor apparatus and the contractile cells. 2. The nervous part of these glands is influenced by very small doses of the poisons; paralyzed by atropine, excited by pilocarpine and digitaline; the cellulo-glandular portion remaining insensible to the same doses. Hence small doses of atropine diminish the salivary and sudoriparous secretions only by paralysis of the nervous apparatus, and it is by exciting this apparatus that pilocarpine and physostigmine increase those secretions. 3. In relatively larger doses, the cellulo-glandular, as well as the nervous, portion of the apparatus is affected by the poisons. Large quantities of atropine check the secretion of sweat and saliva by paralyzing both those portions of the glands, whilst large quantities of pilocarpine and of physostigmine exaggerate it by simultaneous excitation of those same parts of the glands. 4. Atropine acts in the above-mentioned manner in much smaller doses than pilocarpine and physostigmine. In other words, the glandular portions are much more sensitive to atropine than to the two latter alkaloids. 5. Atropine surpasses in its action pilocarpine and physostigmine when given in corresponding doses. 6. If atropine be given on the one hand and pilocarpine on the other, either simultaneously or successively, the action of atropine always preponderates for corresponding doses of the other poison. 7. If atropine be given in small doses, so as to paralyze the nervous and leave intact the cellulo-glandular portions of the glands, the latter may be excited by large doses of pilocarpine or of physostigmine. The exaggerated secretion which results simulates a double physiological antagonism. 8. In no case does pilocarpine annihilate the action of atropine upon the pupil.—*London Med. Record*, Jan. 15, 1882.

Tolerance of Poisons.

ROSSBACH has studied this subject (*Pflüger's Archiv*, Bd. xxi.), and arrives at the following conclusions: 1. Tolerance of poisons comes on very rapidly (except in nervous and hysterical subjects), and it is thus that at the third or fourth cigar symptoms of tobacco-poisoning cease, and that the quantity of alcohol necessary to produce intoxication increases with use. When atropine is given to dogs daily, certain symptoms are observed at first which disappear in the course

of a few days—such as hyperæsthesia of the skin, trembling of the body, etc. The animals then become as lively and vivacious as unpoisoned animals. 2. The organs of man and of animals become equally habituated to poisons, and in the same organism each organ behaves differently towards these. 3. There are organs which never become habituated to poisons, in the sense that they always behave towards them as at the beginning of the administration. It is thus that morphia, always administered in the same dose, induces sleep for weeks or months; that the smoker, consuming a uniform quantity of tobacco, feels, at the end of years, the same beneficial influence continued. It is the same with tea and coffee. Certain organs are influenced by the use of atropine after long usage as at the commencement—the pupil always dilates, the salivary secretion is diminished. It is precisely those organs which are most impressionable which are least influenced by habitual use of poisons. 4. Nevertheless those organs, by the prolonged use of a poison, remain influenced by it for a period of time which progressively diminishes; hence drunkards, and those addicted to morphia, experience the need of more and more frequent doses of alcohol or of morphia. 5. Another series of organs reacts differently towards the same poison, according as it is administered for the first time or after a lengthened interval. Thus atropine acts at first upon the heart by paralyzing the vagus, whilst at a later period it paralyzes the motor nerves and the muscles of that organ. 6. Again, there are organs which become habituated to certain poisons (tobacco, alcohol, morphia), so that after a certain time they present no functional derangement. 7. These propositions are not valid, except where the dose remains the same. When the dose is increased, however slowly, a time comes when the poison again exhibits its action. 8. In an organism accustomed to a certain dose of the poison, a much larger dose acts in the same manner as a small dose on an unhabituated organism. 9. In general, the symptoms of chronic poisoning are extended to more organs and functions than those of acute poisoning. Thus in chronic morphia-poisoning we observe restlessness, insomnia, hyperæsthesia, neuralgia, an exaggeration of reflex movements, anorexia, malaise, vomiting, palpitation, albuminuria, malnutrition; whilst in acute morphinism purely nervous symptoms alone are observed. 10. In man and animals, if the dose of the poison be not continually augmented, but be kept at medium quantity, this amount may be supported with impunity for the rest of life. The proof of this is, that thousands of persons arrive at an advanced age who have taken for long periods tobacco, alcohol, coffee, or opium. 11. If the use of the poison be broken off at the end of a relatively short time—weeks, months, or it may be, in exceptional cases, years—health is restored in the course of a few days. But if the cessation take place after a more considerable period of use of the poison, certain morbid phenomena are observed, such as trembling, acute delirium, intellectual feebleness, and lowness of spirits. If now the use of the poison be recommenced, these symptoms rapidly disappear. 12. There is an epoch at which reparation of tissue is still possible, and one when this is no longer possible. In this last case, there is a notable change in the chemical composition of the substratum of the tissues; and this modification is appreciable by the microscope in certain organs, as, *e. g.*, the liver. 13. In order to explain the effects of chronic poisoning, we may say that the organs are not more impressionable to normal stimuli (carbonic acid, ferments), but only to the poison; failing this, the body is deprived of excitants, and a profound depression of most of the functions is produced. 14. The fact that certain organs end by being no longer impressionable to poisons, is comparable to the immunity which certain organisms enjoy towards certain organized poisons (those of infectious diseases) when once they have been the seat of their action.—*London Med. Record*, Jan. 15, 1882.

Phosphorus Poisoning treated by Turpentine.

M. MAREAU has made a number of experiments on rabbits, in order to attempt to determine the cause of death in phosphorus poisoning, and at the same time to examine into the value of turpentine as an antidote. Rabbits were selected because they do not vomit the poison; the preparation used was 1 gramme of phosphorus dissolved in 400 grammes of sweet oil of almonds. He places the fatal dose at about 1 gramme per 100 kilo. body weight of the animal.

In the normal condition, the rectal temperature of the rabbit is about 39.2° , and the proportion of oxygen in the blood, estimated by the method of Schtzenberger, is 15 c. c. to each 100 grammes of blood. When, however, rabbits are poisoned with phosphorus, their temperature falls, on an average about 3° , urea is diminished in the urine, and the quantity of oxygen in the blood may be reduced to 13 c. c. to 100 grammes. If now spirit of turpentine is administered, the progressive reduction of the temperature is stopped, urea is eliminated in increased quantity, and the proportion of oxygen in the blood becomes normal.

M. Mareau thinks that possibly the turpentine unites with the phosphorus to form a compound which is less poisonous than phosphorus alone, and which has a weaker affinity for oxygen. He finds that the purified spirit of turpentine is much less efficacious than the commercial.—*Revue Scientifique*, Dec. 10, 1881.

Poisoning with Boracic Acid.

These two cases are recorded by Dr. S. E. MOLODENKOW, of Moscow, in *Wratsch*, No. 31, 1881. The first patient was 25 years of age, and suffered from pleuritic effusion of three weeks' standing. Paracentesis was performed without chloroform, and the pleural cavity washed out with a five per cent. solution of boracic acid. The process of washing out lasted one hour, and thirty pounds of the solution were used, part being allowed to remain in the cavity. Immediately after the operation there was a slight feeling of improvement, but this was soon followed by nausea and persistent vomiting. Next day the vomiting continued, the pulse was very rapid and feeble, the patient was extremely weak and suffered from hiccups. Towards evening erythema appeared on the face. On the third day the erythematous blush had extended to the neck, chest, and abdomen; the face, and especially the eyelids, were swollen; the vomiting, hiccups, and general depression persisted; the pulse was scarcely perceptible, but consciousness was undisturbed. On the fourth day the erythema had spread to the thigh, while on the face and throat small pearly vesicles appeared; the pulse was still almost imperceptible, the vomiting continued, the patient's vision was dim, but consciousness was unaffected. Death took place towards evening of the fourth day. There was no *post-mortem* examination.

The second patient was aged 16, and suffered from a large lumbar abscess, which was opened and washed out as in the case just described, with a similar solution and for the same length of time. A precisely similar train of symptoms was observed, and death occurred on the third day. At the section the first and second lumbar vertebrae were found to be widely affected with caries, while pus had burrowed along the right psoas muscle. Nothing else abnormal was found except a few small extravasations of blood on the pericardium, corresponding to the anterior surface of the left auricle and ventricle.

The symptoms of boracic acid poisoning may be thus stated: Persistent vomiting; hiccups; erythema, beginning on the face; a slight temporary rise in temperature; and diminution of the heart's contractile power to such a degree as ultimately to amount to paralysis of the heart. Therapeutically, the author suggests morphia and stimulants as worthy of trial.—*Glasgow Medical Journal*, December, 1881.

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JEFFERSON MEDICAL COLLEGE,

PHILADELPHIA.

THE Fifty-seventh Session of the Jefferson Medical College will begin on Monday, October 3d, 1881, and will continue until the end of the third week of March, 1882. Preliminary Lectures will be held from Monday, 12th of September.

PROFESSORS.

JOSEPH PANCOAST, M.D.,
General, Descriptive, and Surgical Anatomy
(Emeritus).

S. D. GROSS, M.D., LL.D., D.C.L. Oxon.,
LL.D. Cantab.,

Institutes and Practice of Surgery.

ELLERSLIE WALLACE, M.D.,
Obstetrics and Diseases of Women and
Children.

J. M. DA COSTA, M.D.,
Practice of Medicine.

WM. H. PANCOAST, M.D.,
General, Descriptive, and Surgical Anatomy.

ROBERT E. ROGERS, M.D.,
Medical Chemistry and Toxicology.

ROBERTS BARTHOLOW, M.D., LL.D.,
Materia Medica and General Therapeutics.

HENRY C. CHAPMAN, M.D.,
Institutes of Medicine and Medical
Jurisprudence

The enlargement of the College, now in progress, will enable the Faculty to perfect the present system of *Practical Laboratory Instruction*, in all the Departments. Rooms are assigned in which each Professor, with his Demonstrators, will instruct the Class, in Sections, in direct observation and hand-work in the Chemical, Pharmaceutical, Physiological, and Pathological Laboratories. Operative and Minor Surgery, and investigation of Gynecological and Obstetric conditions on the *Cadaver*, will be taught, as also Diagnosis of Disease on the living subject.

This course of Instruction is *free of charge, but obligatory upon* candidates for the Degree, except those who are Graduates of other Colleges.

A SPRING COURSE of Lectures is given, beginning early in April, and ending early in June. There is no additional charge for this Course to matriculates of the College, except a registration fee of five dollars; non-matriculates pay forty dollars, *thirty-five of which, however, are credited on the amount of fees paid for the ensuing Winter Course.*

CLINICAL INSTRUCTION is given *daily* at the HOSPITAL OF THE JEFFERSON MEDICAL COLLEGE throughout the year by Members of the Faculty, and by the Hospital Staff, which is constituted as follows:—

Surgeons.

JOHN H. BRINTON, M.D.,
S. W. GROSS, M.D.,
R. J. LEVIS, M.D.

Ophthalmic Surgeon.

PROF. WILLIAM THOMSON, M.D.

Aural Surgeon.

L. TURNBULL, M.D.

Physicians.

J. SOLIS-COHEN, M.D.,
JAMES C. WILSON, M.D.,
OLIVER P. REX, M.D.,
W. W. VANVALZAH, M.D.

Gynecologists.

F. H. GETCHELL, M.D.,
J. EWING MEARS, M.D.

Pathologist.

MORRIS LONGSTRETH, M.D.

F E E S.

Matriculation Fee (paid once).....\$5 00	Practical Anatomy.....\$10 00
Ticket of each Professor (7) \$20.....140 00	Graduation Fee.....30 00

Fees for a full course of Lectures to those who have attended two full courses at other (recognized) Colleges—the matriculation fee, and\$70 00
To Graduates of less than three years of such Colleges—the matriculation fee, and 50 00
To Graduates of three years, and upwards, of such Colleges—the matriculation fee only.

The Annual Announcement, giving full particulars, will be sent on application to
ELLERSLIE WALLACE, Dean.

Graduates who may see this notice will confer a great favor by sending to the Dean a postal card with the correct names and residences of themselves, and of other graduates in their vicinity, to whom announcements may be sent.

UNIVERSITY OF PENNSYLVANIA—MEDICAL DEPARTMENT.

Thirty-Sixth Street and Woodland Avenue (Darby Road), Philadelphia.

One Hundred and Seventeenth Annual Session, 1882-83.

PROFESSORS.

WILLIAM PEPPER, M.D., Provost.
HENRY H. SMITH, M.D., Emeritus Professor of Surgery.

JOSEPH LEIDY, M.D., LL.D., Professor of Anatomy.

RICHARD A. F. PENROSE, M.D., LL.D., Professor of Obstetrics and Diseases of Women and Children.

ALFRED STILLÉ, M.D., LL.D., Professor of Theory and Practice of Medicine, and Clinical Medicine.

D. HAYES AGNEW, M.D., LL.D., John Elica Barton Professor of Surgery and Clinical Surgery.

WILLIAM PEPPER, M.D., LL.D., Professor of Clinical Medicine.

WILLIAM GOODELL, M.D., Professor of Clinical Gynecology.

JAMES TYSON, M.D., Professor of General Pathology and Morbid Anatomy.

HORATIO C. WOOD, M.D., Professor of Materia Medica, Pharmacy, and General Therapeutics.

THEODORE G. WORMLEY, M.D., LL.D., Professor of Chemistry.

JOHN ASHHURST, JR., M.D., Professor of Clinical Surgery.

HARRISON ALLEN, M.D., Professor of Physiology.

WILLIAM F. NORRIS, M.D., Clinical Professor of Diseases of the Eye.

GEORGE STRAWBRIDGE, M.D., Clinical Professor of Diseases of the Ear.

HORATIO C. WOOD, M.D., Clinical Professor of Nervous Diseases.

LOUIS A. DUNNING, M.D., Clinical Professor of Diseases of the Skin.

Matriculates who have not received a collegiate degree are required to pass a preliminary examination in English and Physics (for details of which see Announcement), and to attend three winter courses of instruction of six months each, consisting of graded didactic lectures, clinical lectures, and practical work in laboratories and hospitals.

In the graded curriculum adopted, the elementary branches are taught in the *first* course, and students are finally examined at its conclusion upon General Chemistry, Materia Medica and Pharmacy. In the *second* term, while a sufficient repetition of unfinished branches is secured, certain more practical ones are added, and the examinations on Anatomy, Physiology, and Medical Chemistry at the end of the term are final. In the *third* course is added practical bedside instruction in Medicine, Surgery, and Gynecology, with clinical facilities in the specialties: and, at its end, students are examined on General Pathology and Morbid Anatomy, Therapeutics, Theory and Practice of Medicine, Surgery, and Obstetrics.

Students, who have attended one course in a regular* medical school, will be admitted as students of the second course in the University, after having satisfactorily passed an examination in General Chemistry and Materia Medica and Pharmacy. Students who have attended two courses in a regular medical school, will be admitted as students of the third course after examination in General and Medical Chemistry, Materia Medica and Pharmacy, Anatomy, and Physiology.

Graduates of other regular medical schools in good standing will be admitted as students of the third course in this institution without any examination.

Graduates of Colleges of Pharmacy and Dental Colleges in good standing are admitted to the second course in the University without an examination.

In the *Spring Session*, beginning the latter part of March, and ending about the middle of June, a valuable course on practical and scientific subjects by a large corps of professors and lecturers is given: and the laboratories of Chemistry, Pharmacy, Histology, Physiology, and Pathology are open, affording a valuable post-graduate course.

A VOLUNTARY FOURTH YEAR OR POST-GRADUATE COURSE has been established, for particulars of which see Catalogue.

The Lectures of the Winter Session of 1882-83 will begin on Monday, October 3, and end on the last day of March.

The Preliminary Course will begin on the second Monday in September.

FEES IN ADVANCE.—1st course of lectures, including matriculation and dissection, \$155. Dissecting material one dollar a part. 2d course, including dissection, \$150. 3d course, including operating and bandaging and graduation fee, \$150.

For Announcement giving full particulars address

JAMES TYSON, M.D., SECRETARY,
P. O. Box 2838, Philadelphia.

* Homœopathic and Eclectic schools are not recognized as being in this category.

BELLEVUE HOSPITAL MEDICAL COLLEGE, CITY OF NEW YORK.

SESSIONS OF 1881-82.

At and after the Session of 1881-82, the College will return to its former requirements as regards fees and graduation; viz., those in force before the Session of 1880-81.

The COLLEGIATE YEAR in this Institution embraces the Regular Winter Session and a Spring Session. The REGULAR SESSION will begin on Wednesday, September 21, 1881, and end about the middle of March, 1882. During this Session, in addition to four didactic lectures on every week-day except Saturday, two or three hours are daily allotted to clinical instruction. Attendance upon two regular courses of lectures is required for graduation. The SPRING SESSION consists chiefly of recitations from Text-Books. This Session begins about the middle of March, and continues until the middle of June. During this Session, daily recitations in all the departments are held by a corps of Examiners appointed by the Faculty. Short courses of lectures are given on special subjects, and regular clinics are held in the Hospital and in the College building.

FACULTY.

- ISAAC E. TAYLOR, M.D.,
Emeritus Prof. of Obstetrics and Diseases of Women and Children, and President of the Faculty.
- JAMES R. WOOD, M.D., LL.D.,
Emeritus Professor of Surgery.
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- AUSTIN FLINT, M.D.,
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Professor of Materia Medica and Therapeutics, and Clinical Medicine.
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Professor of Obstetrics and Diseases of Women and Children, and Clinical Midwifery.
- EDWARD G. JANEWAY, M.D.,
Prof. of Diseases of the Nervous System, and Clinical Medicine, and Associate Professor of Principles and Practice of Medicine.

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- HENRY D. NOYES, M.D.,
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- EDWARD L. KEYES, M.D.,
Prof. of Cutaneous and Genito-Urinary Diseases.
- JOHN P. GRAY, M.D., LL.D.,
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Clinical Professor of Surgery.
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